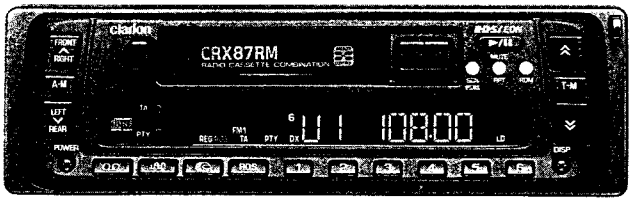
Clarion Co., Ltd. Export Division—22-3, Shibuya 2-chome, Shibuya-ku, Tokyo, 150 Japan Tel: 03-3400-1121 Fax: 03-3400-8679 Telex: J22908, J22152
Service Dept.—35-2, Hakusan 5-chome, Bunkyo-ku, Tokyo, 112 Japan Tel: 03-3813-5151 Fax: 03-3814-2550

clarion Service Manual

Published by Service Information Section

CRX97RM



CRX87RM

RDS-EON FM/MW/LW RADIO CASSETTE COMBINATION WITH MULTI CD CHANGER CONTROL

Model **CRX97RM** (PE-9807B)
CRX87RM (PE-9808B)

CRX97RM	CRX87RM
Tape Mechanism: TOM-I-RM	Tape Mechanism: TOM-I-C
Dolby B NR	
APC	
MTL	
RCA Sub-woofer Line Out	

■SPECIFICATIONS:

Radio section

Circuit system: Superheterodyne
Tuning system: Electronic tuning
Receiving frequency: LW 153kHz to 279kHz
MW 531kHz to 1,602kHz
UKW(FM)
87.5MHz to 108MHz
Intermediate frequency:
LW, MW 450kHz
UKW(FM) 10.7MHz

Tape section

Reproduction system: Auto reversing
4 track, 2 channel stereo cassette tape playback
(Monaural also capable)
Tape speed: 4.76cm/sec. (1-7/8 ips)

Composite

Load impedance: 4Ω×4
Power output: 30W×4
Power supply voltage:
DC 14.0V (10.8V to 15.6V)
Negative ground

Power consumption: Less than 10A
(at max. output)
Dimensions: Width 178mm
Height 50mm
Depth 155mm
Weight: 1.3kg

• Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation
• "DOLBY" and the double-D symbol ⊡⊡ are trademarks of Dolby Laboratories Licensing Corporation

■COMPONENTS:

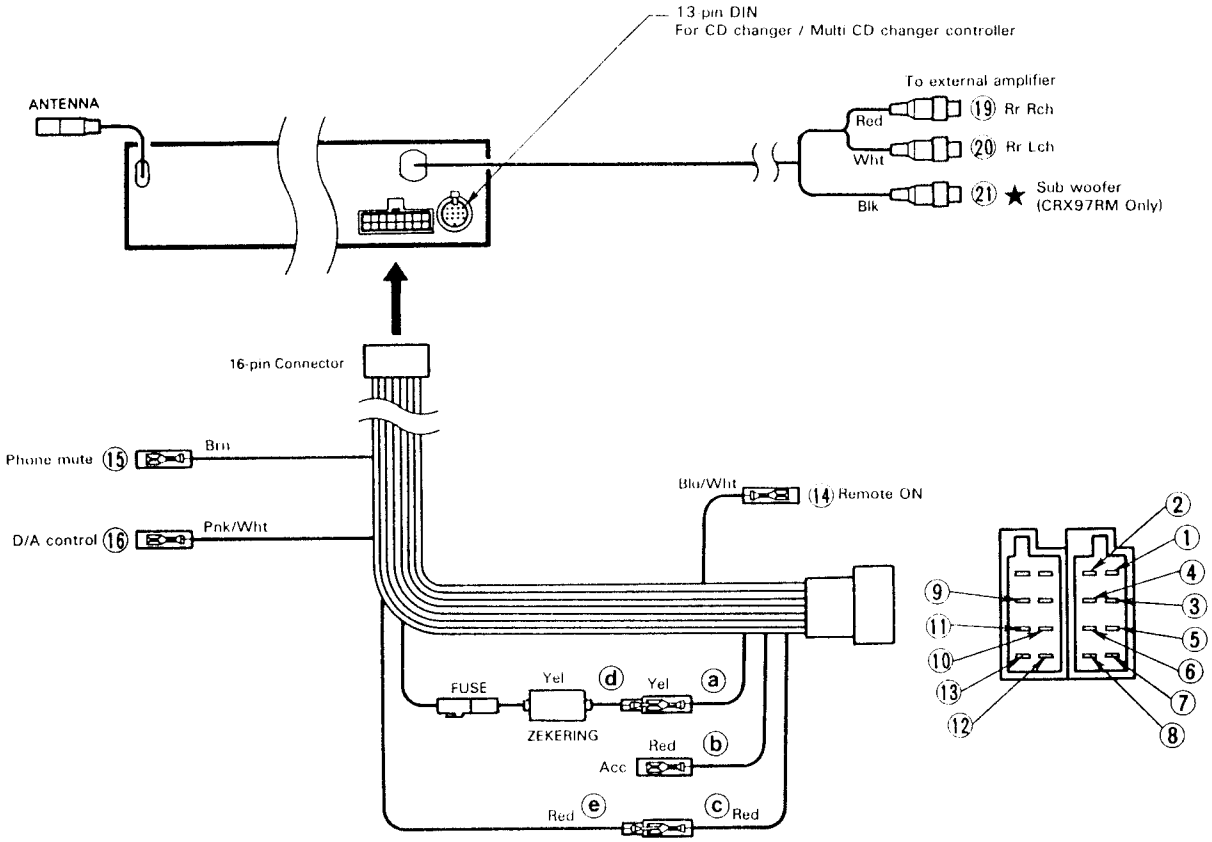
● PE-9807B-A/PE-9808B-A

Main unit		1
Mounting bracket	300-9035-01	1
Sticker	291-0062-00	1
DCP case	335-4467-01	1
Parts bag	921-9122-00	1
Hook plate (Right)	331-0118-00	1
Hook plate (Left)	331-0119-00	1
Lead holder	335-0833-01	2
Spacer	345-3653-01	1
Screw	716-0726-01	1
Extension lead	854-3283-00	1

〈OPTIONAL〉

Transparent-DCP ass'y DCP-015-200

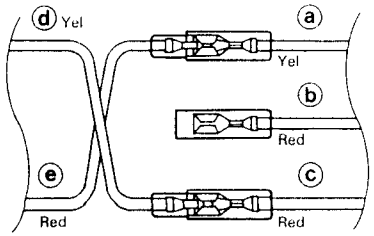
■WIRE CONNECTION:



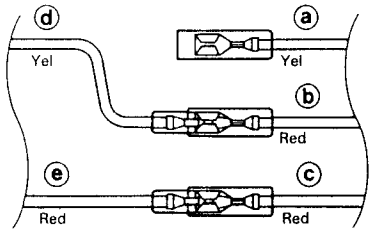
No.	Colour	Description
①	Violet	REAR RIGHT ⊕
②	Violet/Black	REAR RIGHT ⊖
③	Grey	FRONT RIGHT ⊕
④	Grey/Black	FRONT RIGHT ⊖
⑤	White	FRONT LEFT ⊕
⑥	White/Black	FRONT LEFT ⊖
⑦	Green	REAR LEFT ⊕
⑧	Green/Black	REAR LEFT ⊖
⑨	Yellow	PERMANENT
⑩	Blue/White	AUTO ANTENNA
⑪	Orange/White	ILLUMINATION
⑫	Red	ACCESSORY
⑬	Black	GROUND
⑭	Blue/White	REMOTE ON
⑮	Brown	PHONE MUTE
⑯	Pink/White	DIGITAL CONTROL
⑰	Black (Red)	REAR RIGHT
⑱	Black (White)	REAR LEFT
㉑	Black (Black)	SUB-WOOFER

	ⓐ	Yellow	ⓓ	Yellow
	ⓑ	Red	ⓔ	Red
	ⓒ	Red		

For VW and Audi vehicles – for models from 1992 and later



For models up to 1991



■FEATURES:

TUNER

- **RDS (Radio Data System): PI (Programme Identification), AF (Alternative Frequency), TP (Traffic Programme Identification), PTY (Programme Type), TA (Traffic Announcement), PS (Programme Service Name), REG (Regional Selection), EON (Enhanced Other Networks), CT (Clock Time and Date Signal), MS (Music/Speech Function)**
- **Electronic Quartz-Locked PLL Tuning**
- **One-Touch Memory (18 FM, 6 MW/LW)**
- **Tuning Modes: Manual Tuning and Station Seek in both directions**
- **Preset Scan (PS) & Auto Store (AS) on FM/MW/LW**
- **DX/Local Switch**
- **Super SASC II (Signal Actuated Stereo Control) & CZ1 Noise Canceller**
- **Adjustable DK Level**

TAPE SECTION

- **Auto Reverse with Dual Azimuth Adjustment Mechanism**
- **Electronic Servo Motor**
- **Key-Off Pinch Roller Release [CRX97RM Only]**
- **Dolby® B Noise Reduction [CRX97RM Only]**
- **Automatic Programme Control – APC [CRX97RM Only]**
- **Metal (70 μs) Tape Equalization [CRX97RM Only]**
- **Hard Permalloy Dual-Gutter Head**
- **Illuminated Tape Door**

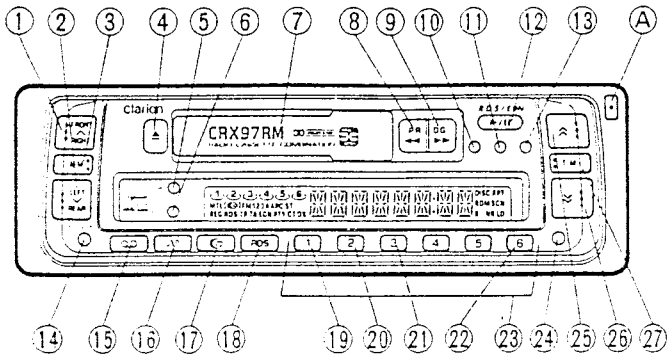
AUDIO SECTION

- **Muting, Loudness, Fader, Bass/Treble Controls**
- **3-Channel Gold-plated RCA Line Level Output [CRX87RM 2 Channels only]**
- **Maximum Power Output: 4×30 W**

GENERAL

- **Multi-CD Changer Control Capability (up to 4 CD Changers)**
- **Night Illumination with Dual Colour Selector (Amber/Green)**
- **Triggered Phone Mute**
- **Power Antenna Activator**
- **Multi-Mode LCD Display**
- **Radio/Tape/CD Changer Mode Selectors**
- **Fully Detachable Control Panel**
- **DIN Chassis**
- **D/A Control**
- **Blinking Theft-Prevention Indicator**

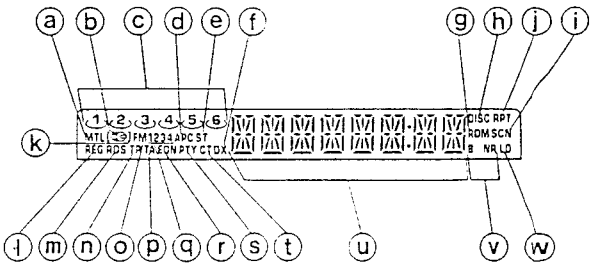
■OPERATION:



1. Up Button (∧)
2. Down Button (∨)
3. Audio Mode Button (A-M)/Loudness Selector Button
4. Eject Button (⏏)
5. Traffic Announcement Button (TA)
6. Programme Type Button (PTY)
7. Cassette Tape Slot Door
8. Fast Forward and Rewind (◄◄, ►►)/ Programme Button (PROG)
9. Preset Scan and Auto Store (PS/AS)/Metal Tape Selector [CRX97RM only]/Scan Button (SCN)
10. Automatic Programme Control Button (APC) [CRX97RM only] /Repeat Play Button (RPT)
11. Audio Muting Button (MUTE)/Play and Pause Button (►/II)
12. Dolby B NR Button [CRX97RM only]/Random Play Button (RDM)
13. POWER Button
14. Tape Mode Selector Button ( )
15. Tuner Mode Selector Button/Band Selector Button ( )
16. CD Changer Mode Selector Button ( )
17. RDS/Regional Select Button
18. Function Button 1
19. Function Button 2
20. Function Button 3
21. Function Button 6
22. Preset Buttons/Direct Disc Buttons
23. Display Mode Selector Button/Illumination Selector Button
24. Up Tuning Button/Programme Type Select Button/Search Control Up Button
25. Down Tuning Button/Programme Type Select Button/Search Control Down Button
26. Tuning Mode Selector Button (T-M) /DX/ LOCAL Button

Ⓐ DCP Release Button

■DISPLAY



■ **Anti-Theft Indicator**

1. Press the POWER button ⑭ to turn off the power, then press the ►/II (MUTE) button ⑫ for more than 2 seconds.
2. Remove the Detachable Control Panel from the main unit, and check that the red indicator lamp is blinking. If not, reattach the panel to the main unit and repeat step 1.
3. When you reattach the DCP to the main unit and switch the power on, the red indicator lamp will stop blinking.

● Controlling the Sound & General Operation

CAUTION!

Turning the ignition on or turning the POWER button on with the volume control at the maximum position can damage your ears.

* **POWER Button** ☛ 14

* **Audio Mode (A-M)/Loudness Selector Button** ☛ 3
  Press the A-M button 3, to select the adjustment mode. The adjustment mode changes in the following order:
  Volume → Bass → Treble → Balance → Fader → Volume
  - **Loudness ON/OFF**
    When you press the A-M button 3, for more than 2 seconds, loudness is turned on, and the **"LD"** indicator (w) lights up. To turn loudness off, press the button again for more than 2 seconds.

* **Audio Control Up Button** ☛ 1
  Audio Control Down Button ☛ 2

☆ **Changing the Illumination Colour**
Holding down button 24, press button 19. Choose amber or green, as you prefer.

☆ **Setting the DSP mode**
If you have a Digital Sound Processor (DSP) connected to your unit, you must carry out this setting without fail. Turn the volume to MAX (Vo33). Holding down button 24, press button 20. The adjustments of the volume and tone are carried on the Digital Sound Processor.

☆ **Setting the Equalizer Mode**
If you have an Equalizer or a Digital Sound Processor with a built-in equalizer connected to your unit, you must carry out this setting without fail. Holding down button 24, press button 21. The bass/treble adjustment is carried out on the equalizer.

☆ **Triggered Audio Mute for Cellular Telephones**
When a telephone call is received, **"TEL"** appears on the display, and muting is applied. When you hang up the phone, the previous mode becomes operative again.

■ Audio Mode Indications and Description of Operation

Audio Control Up/Down Buttons / Audio Mode	Center Position	Description of Operation
VOL (Volume adjustment)	VOL 00 (Note 3)	The volume increases as the numbers increase.
BASS (Bass adjustment)	BASS -7 (negative indication) BASS 0 BASS +7	The bass sound is attenuated as the numbers decrease from the center position and emphasized as the numbers increase. (The range is from -7 to +7.)
TREB (Treble adjustment)	TREB -7 (negative indication) TREB 0 TREB +7	The treble sound is attenuated as the numbers decrease from the center position and emphasized as the numbers increase. (The range is from -7 to +7.)
BAL (left/right balance adjustment)	BAL L 05 (Balance Left) BAL 00 BAL R 05 (Balance Right)	The sound of the left speakers is emphasized when the display switches from "BAL 00" Balance to "BAL L" Balance. Left and the sound of the right speakers is emphasized when the display switches from "BAL 00" Balance to "BAL R" Balance Right.
FAD (front/rear balance adjustment)	FAD R 05 (Fader Rear) FAD 00 FAD F 05 (Fader Front)	The sound of the rear speakers is emphasized when the display switches from "FAD 00" Fader to "FAD R" Fader Rear, and the sound of the front speakers is emphasized when the display switches from "FAD 00" Fader to "FAD F" Fader Front.

Note 1 In the balance and fader adjustment modes, the actual steps and the steps indicated on the display do not match due to the difference in number of steps.
Note 2 The original display reappears approximately 5 seconds after the adjustments in the various audio modes.
Note 3 The various modes are set to the following values when the power is first turned on after the set is installed in the car: VOL 09, BASS 0, TREB 0, BAL 00 and FAD 00.

● Listening to the Radio

* **Tuner Mode Selection/Band Selection Button** ☛ 16
  - **Tuner Mode Selection**
    Press button 16 to set the tuner mode.
  - **Band Selection**
    When you press button 16, the reception band changes in the following order:
    FM1 → FM2 → FM3 → L/M → FM1
    (FM1, FM2 and FM3 are on the same reception frequency band.)

* **Tuning Mode Selector Button (T-M)** ☛ 27
  Press the T-M button 27 so that **"MAN"** appears on the display. The manual tuning mode is now set. Tune into a station by pressing button 25 or button 26. Unless you press button 25 or button 26 within 5 seconds of switching to the manual tuning mode, the unit will return to the seek tuning mode.
  - **Manual Tuning**
    During FM reception, the frequency changes in steps of 0.05 MHz. On MW, it changes in steps of 9 kHz, and on LW, in steps of 1 kHz.
    1. Press the T-M button 27 to set the manual tuning mode.
    2. When you press button 25, the frequency increases, and when you press button 26, it decreases. (If you hold either button down, the frequency changes continuously.)
  - **Seek Tuning (Local/DX)**
    There are two sensitivity levels for seek tuning: DX seek, which will tune in any broadcasting stations which can be received, and Local seek, where only those stations with a sufficiently strong signal, i.e. local stations, can be tuned in.
    <**DX Seek**>
    1. Check that the **"DX"** indicator (f) is lit. If not, press button 27 for more than 2 seconds.
    2. Press button 25 to tune toward higher frequencies and press button 26 to tune toward lower frequencies. Tuning will stop when a broadcast station is received.
    <**Local Seek**>
    1. Press button 27 for more than 2 seconds. The **"DX"** indicator (f) will disappear and **"LO"** will be displayed for a short time and then disappear.
    2. Press button 25 to tune toward higher frequencies and press button 26 to tune toward lower frequencies. Tuning will stop when a broadcast station with a strong signal is received.

* **MUTE Button** ☛ 12
  Press button 12 to instantly mute the sound. Press it once more to release muting.

* **Preset Buttons 1, 2, 3, 4, 5 and 6** ☛ 23
  By pressing a Preset button you can instantly recall a station which has been stored in memory.
  * When calling a broadcasting station, unless you release the Preset button within 2 seconds, the displayed frequency will be stored at the Preset button, so be careful.

☆ **Storing Stations in the Preset Memory**
6 radio stations can be stored in memory for each band.
1. Press button 16 to select the reception band.
2. Press button 10 for more than 2 seconds to store stations automatically in the memory (Auto Store). If less than 6 stations are stored in this process, or if you want to store a broadcasting station with a weak signal, carry out the following steps.
3. Tune in the broadcasting station using Manual Tuning.
4. Press the desired Preset button for more than 2 seconds. The sound will go off when you press the button, and when it comes on again, the station has been stored.

* **Preset Scan/Auto Store Memory Button** ☛ 10
  - **Preset Scan**
    Press button 10. The broadcasting stations stored at Preset buttons 1 to 6 will be received in order for 5 seconds each. When you press button 10 again, or press one of the Preset buttons 1 to 6, this mode will be released. (When the unit is receiving an FM, all the stations stored in FM1, FM2 and FM3 will be received in order.)
    * If you press button 10 for more than 2 seconds, the Auto Store memory mode will become operative. All the stations stored in the memory so far will be cleared, and new ones will be stored instead, so be careful.
  - **Auto Store Memory**
    6 strong-signal broadcasting stations can be stored automatically for each band. (See "Storing Stations in the Preset Memory".)
    * Stations previously stored in the preset memory are cleared when new ones are stored using Auto Store.

☆ **Stereo Reception Indicator**
When a stereo broadcast is received, the **"ST"** indicator (e) lights up.

● RDS (Radio Data System) Operation

* **RDS Button** ☛ 18
  Set the RDS mode by pressing the RDS button 18, so the **"RDS"** indicator (m) lights up. When you press the button again, this mode is released.
  1. When an RDS station is received, the programme name is displayed. (PS: Programme Service Name)
  2. If an emergency broadcast is received while an RDS station is being received, **"ALARM"** is displayed. The volume of the emergency broadcast is automatically set at the pre-set value.
  3. If good reception of the RDS broadcast becomes impossible in your present location, the **"RDS"** indicator (m) starts blinking.
  4. When seek tuning is carried out in the RDS mode, only stations broadcasting an RDS signal will be received.
  5. • **Preset Scan in RDS Mode**
     When you press the PS button 10, Preset Scan will be carried out only on the RDS stations among the preset stations.
     • **Auto Store in RDS Mode**
     When you press the AS button 10 for more than 2 seconds, only RDS stations will be stored on the Preset buttons.

☆ **Same-Programme Search (PI: Programme Identification)**
Press the Preset button 23 on which an RDS station has been stored, and if this station is not received (the **"RDS"** indicator (m) is blinking), press the same Preset button again. **"SEARCH"** will be displayed and a station broadcasting the same programme will be received.
(The PI code will be displayed for about 5 seconds if you hold down the RDS button 18 and press function button 1 19 at the same time.)

☆ **Regional Programme Function (REG)**
REG ON (REG indicator lit):
Only local (regional) radio broadcasts in the local area will be sought.
REG OFF (REG indicator off):
If you are receiving a regional station in a certain area and you enter a different area, the regional station for that area will be received. In the RDS mode, the REG function will turn on/off each time you press the RDS button 18 for more than 2 seconds.

☆ **RDS EON (Enhanced Other Networks Information)**
When EON data is received for an RDS broadcast, the **"EON"** indicator (r) will light up.

1. If you are waiting to receive traffic information, and the **"EON"** indicator lights up, traffic information will be broadcast when the traffic information begins, even if it is on a different station to the one you are currently receiving.
2. When the **"EON"** indicator is lit, if you press a Preset button 23, the station with the best signal in that area will be received instantly.

* Certain countries and certain stations do not transmit EON data.

☆ **Music/Speech Function (MS)**
This function automatically turns loudness off to make it easier to hear speech broadcasts.
If you hold down the RDS button 18 and press the Preset button 6 22 for less than 2 seconds, this function will be set and **"MS ON"** will be displayed. Loudness will be switched on/off according to the received data from the broadcasting station. When you repeat the operation, this function will go OFF and **"MS OFF"** will be displayed.
* Some broadcasting stations do not transmit Music/Speech data.

* **PTY (Programme Type) Button** ☛ 6
  The PTY function enables you to give the selected PTY broadcast listening priority when it begins.
  When you press button 6 after selecting the desired Programme type (PTY), the **"PTY"** indicator (s) lights up and the PTY broadcast wait state becomes operative.
  When you press button 6 again, the PTY wait state is released. However, if you press this button during a PTY broadcast, the PTY broadcast is cancelled and the PTY broadcast wait state becomes operative again.
  When the selected PTY broadcast is received, it is reproduced on your unit.
  * In the traffic information wait state, traffic information broadcasts have priority over PTY broadcasts.
  * During a PTY broadcast, the display will change in the following order each time you press the DISP button 24:
    PTY name → PS name → clock display (CT) → PTY name

☆ **PTY Selection Method**
1. Press the PTY button 6 for more than 2 seconds.
2. Select the desired programme type (PTY) using the tuning up/down buttons 25 and 26.
3. After PTY selection, press the PTY button 6. The PTY broadcast wait state will then become operative.

☆ **PTY Storage, Calling and Checking Method**
1. After carrying out PTY selection, press a Preset button 23 for more than 2 seconds. (6 settings can be stored.)
2. When the PTY display blinks, the storage process is complete.
3. To call up a stored setting, press the PTY button for more than 2 seconds, then press the desired Preset button 23.
* If you press the PTY button for more than 2 seconds, the PTY select mode will be set, so be careful.

* **TA (Traffic Announcement) Button** ☛ 5
  When traffic information begins, this is given top listening priority.
  When you press the TA button, the **"TA"** indicator (p) lights up, and a traffic information station is sought. If such a station is found, the **"TP"** indicator (n) lights up, and the traffic information wait state becomes operative. When you press the TA button again, this state is released.
  If you press the TA button while listening to traffic information, the traffic information broadcast is cancelled and the traffic information wait state becomes operative again.
  If no traffic information station is found, **"NO TRA"** is displayed, so you then press the TA button to release the state. Traffic information is automatically reproduced at the preset volume.
  * When the traffic information begins, **"TRA INFO"** is displayed for about 5 seconds, after which the PS (Programme Service Name) or frequency is displayed. Also, if the traffic information begins while the clock (CT: Clock Time and Date) is being displayed, the clock display reappears after the **"TRA INFO"** display.
  2. While you are listening to traffic information, loudness is turned OFF.
  3. The table below shows what happens when the DISP button 24 is pressed in certain display states.

Display before button is pressed	Display after button is pressed
TRA INFO	PS or CT
PS	TRA INFO
CT	PS

  4. Even if the **"TA"** indicator (p) is lit, when a station not broadcasting traffic information is being received, a traffic information station will be sought when you press the TA button.
  5. • Preset Scan when **"TA"** Indicator (p) is Lit:
     When you press the PS button 10, only stations broadcasting traffic information will be covered by the Preset Scan.
     • Auto Store when **"TA"** indicator (p) is Lit:
     If you press the AS button 10 for more than 2 seconds, only stations broadcasting traffic information will be auto stored.

☆ **Traffic Information and Emergency Broadcast Volume Setting Method**
1. Press the TA button for more than 2 seconds.
2. Adjust the volume using the buttons 1 and 2.
3. If you press any button other than 1 or 2, and take no other action for 5 seconds, the previous state will become operative again.

☆ **Time Display Function (CT: Clock Time and Date)**
In areas where CT data is broadcast, the time can be displayed.
When CT data is received, the **"CT"** indicator (j) lights up.
When you press the DISP button 24, the time is displayed. If you press this button again or else press the mode selector button, the original display will reappear.
* Certain countries and certain broadcasting stations do not broadcast CT data. Also, depending on the area, the time may be incorrectly displayed, so be careful.

● Listening to Cassette Tapes

☆ **Cassette Tape Playback**
Insert the cassette tape horizontally so that side where the tape can be seen is on the right.

✱ **Tape Mode Selector Button** ☛ 15
When you press button 15, **"TAPE"** is displayed, and tape playback begins. If no cassette tape has been inserted, **"NO TAPE"** will be displayed.

✱ **Play/Pause Button** ☛ 12
Each time you press button 12 playback begins or pauses.

✱ **Eject Button** ☛ 4
When you press button 4, the cassette tape is ejected. If you eject the tape while it is being played, the tuner mode is set.

✱ **Fast Forward and Rewind/Programme Selector Buttons** ☛ 8, 9
- **Using Fast Forward/Rewind**
  1. During top side playback (playback direction is toward the right):
     Fast forward: Press button 9 until it locks.
     Rewind: Press button 8 until it locks.
  2. During bottom side playback (playback direction is toward the left):
     Fast forward: Press button 8 until it locks.
     Rewind: Press button 9 until it locks.
  3. Release
     Press the opposite button – either 8 or 9. The mode can also be released by pressing the Tape Mode Selector button 15 or the Play/Pause button 12.
  ★ **"FF/REW"** is displayed during fast forwarding and rewinding of the tape.
- **Changing the Programme (Running Direction)**
When you press buttons 8 and 9 simultaneously, the tape playback direction will change.

☆ **Radio Monitor**
A press of button 16 while the deck is in the fast forward or rewind mode will allow you to listen to the radio.

☆ **APC (Automatic Programme Control)** ☛ 11 **[CRX97R only]**
1. Press button 11. The **"APC"** indicator ⓓ will light up.
2. During top side playback (playback direction is toward the right):
   When you press button 8, the tape will rewind to the beginning of the track being played.
   When you press button 9, the tape will fast-forward to the beginning of the next track.
3. During bottom side playback (playback direction is toward the left):
   When you press button 8, the tape will fast-forward to the beginning of the next track.
   When you press button 9, the tape will rewind to the beginning of the track being played.
   ★ Depending on the point at which the button is pressed, the tape may rewind to the beginning of the previous track, or fast-forward 2 tracks.
4. Release
   Press button 11.

★ APC cannot be used on the kinds of tapes listed below. If APC fails to function when such a tape is being played, it does not mean that the unit is faulty.
- Tapes with a low recording level
- Tapes on which the non-recorded sections between the tracks are shorter than 4 seconds
- Tapes with long pauses during tracks
- Tapes with noise recorded between tracks

✱ **Metal Tape Button** ☛ 10 **[CRX97RM only]**
Use this button to select the proper equalization for the type of tape being used.

✱ **Dolby B NR Button** ☛ 13 **[CRX97RM only]**
When playing a tape recorded with Dolby Noise Reduction, press button 13 so that the **"B NR"** indicator ⓥ lights up. When you press this button again, the setting is released.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

● Operating a CD Changer

You can connect a CD changer (sold separately) to this unit to enjoy CD playback.

✱ **CD Changer Mode Selector Button** ☛ 17
Press button 17. The disc number ⓒ and track number will appear on the display, and playback will start.
★ If CD playback does not start, the reason will appear on the display. For details, see page ●.

☆ **Last Position Memory**
Before the power is switched off, and before changing to another mode, this unit stores the setting for the track which was being played last. When playback is resumed, it starts with this track.
★ When the magazine is replaced, the stored setting for the track previously played is erased.

✱ **Play/Pause Button** ☛ 12
Each time you press button 12, playback begins or pauses.

✱ **Disc Up Search Button** ☛ 17
When you press button 17, the next disc starts playing. Each time you press this button, the unit moves on to the next disc, in order. If 6 discs have not been loaded in the magazine, the empty disc numbers are skipped.

✱ **Direct Disc Buttons** ☛ 23
When you press button 23 (1 to 6), the disc corresponding to the button which was pressed is played. If you press the button for the disc number currently playing, the unit will return to the first track on the disc.

✱ **Search Control Up Button** ☛ 25/**Search Control Down Button** ☛ 26
- **Track Number Search**
When you press button 25, the track number goes up, and when you press button 26, the track number goes down. The track number is shown on the display.
- **Cueing/Reviewing (high-speed playback)**
Press button 25 for cueing and button 26 for reviewing.

✱ **Repeat Play Button** ☛ 11
The repeat function consists of Track Repeat, which plays one track repeatedly, and Disc Repeat, which plays one disc repeatedly.
- **Track Repeat**
Press button 11. The **"RPT"** indicator ⓙ lights up, and the track currently playing is played over and over again. When you press the button again, this mode is released.
- **Disc Repeat**
Press button 11 for more than 2 seconds. The **"DISC"** indicator ⓗ and the **"RPT"** indicator ⓙ light up, and the disc currently playing is played over and over again. When you press the button again, this mode is released.

✱ **Scan Button** ☛ 10
Press this button to play the first 10 seconds CD tracks.
The scan function consists of Track Scan, which plays a bit of each track on the disc, and Disc Scan, which plays a bit of the first track on the disc and then moves on to the next disc.
- **Track Scan**
Press button 10. The **"SCN"** indicator ⓘ lights up, and track scan begins. When you press the button again, this mode is released and playback continues. When it has finished playing the first bit of the last track, Track Scan moves on to the next disc and continues from there.
- **Disc Scan**
Press button 10 for more than 2 seconds. The **"DISC"** indicator ⓗ and the **"SCN"** indicator ⓘ light up, and Disc Scan begins. When you press the button again, this mode is released and playback continues.

✱ **Random Play Button** ☛ 13
The Random Play function consists of normal Random Play, which selects and plays tracks at random from one disc, and Disc Random Play, which selects and plays tracks at random from among all the discs in the magazine.
- **Random Play**
Press button 13. The **"RDM"** indicator ⓚ lights up, and random play begins. When you press this button again, this mode is released. When the unit has finished playing all the tracks on the disc, it moves on to the next disc and starts random play on that disc.
- **Disc Random Play**
Press button 13 for more than 2 seconds. The **"DISC"** indicator ⓗ and the **"RDM"** indicator ⓚ light up, and random play of all tracks on all discs begins. When you press the button again, this mode is released.
★ Tracks are selected at random, so the same track may be played more than once.

■ Typical Displays in CD Changer Mode

Button No. and Mode of Operation	Display	Explanation of the Display
When mode changes	CONNECT	Displayed when the CD changer is not connected (wrongly wired, for example)
	NO MAGAZ	Displayed when the magazine is not set in the CD changer
	NO DISC	Displayed when no CD has been inserted in the magazine
10 During Disc Scan	1 2 3 4 5 6 D SCAN DISC SCN	"D-SCAN" displayed
13 During Disc Random Play	1 2 3 4 5 6 D RANDOM DISC RDM	"D-RANDOM" displayed

■ Typical Displays in Multi CD Changer Mode

Button No. and Mode of Operation	Display	Explanation of the Display
When multi CD changer mode changes	1 2 3 4 5 6 (1) (2) (3) (4) 0 00:00	CD changer number and disc number will be flashing.
24 Changer Lock	1 2 3 4 5 6 (1) (2) (3) (4) 0 00:00	"L 1" displayed

● Multi CD Changer Controls

A multi changer controller MCC474 (sold separately) can be connected to this unit so that up to four CD changers can be used and operated from the front panel.
Optical digital connections are also possible when used with an optical source selector RCB038.

When using multi CD changer systems:
The CD changers must be operated somewhat differently. Read both the section on CD changer operation and this section on multi changer operation. (The following only includes explanations for those items for which the operation or display is different.)

☆ **Display Change**
The changer number ⓐ appears on the display.

☆ **The Disc Up Search Button** 17 **is also used as the CD Changer Up Button.**
- **Disc Up Search Button**
Press button 17 to start playing the next disc. When pressed while the last disc is playing, playback switches to the next CD changer.
- **Changer Up Button**
Press button 17 for at least 2 seconds to switch to the next CD changer.

☆ **Scanning Operation Changes**
The user operation is the same, but scanning continues on the next changer once all the discs on one changer have been scanned.
- **Track Scan**
Track scanning starts when button 10 is pressed. Once the last track on the last disc in the magazine is scanned, track scanning continues on the next changer. Press the button again to stop scanning.
- **Disc Scan**
Disc scanning starts when button 10 is pressed for more than 2 seconds. Once the last disc in the magazine is scanned, disc scanning continues on the next changer. Press the button again to stop scanning.

☆ **The random play modes operate as single disc random play and all disc random play.**
- **Single Disc Random Play**
Random play starts when button 13 is pressed. Once the last disc is played, random play continues on the next changer. Press the button again to cancel the random play mode.
- **All Disc Random Play**
Disc random play starts when button 13 is pressed for more than 2 seconds. Tracks are selected at random from all of the discs on all of the changers. Press the button again to cancel the random play mode.

☆ **Changer Lock Function**
When this function is set, the disc up search, scanning and random play operations do not move on to the next CD changer, making it convenient when you only want to use one changer.
- **Setting the Changer Lock Function**
Press button 24 for more than 2 seconds. "L 1" appears on the display and operation is locked onto the CD changer which is currently playing. Press the button again for more than 2 seconds to cancel this function.

Note: The changer up search function can still be used even when the changer lock function is set.

■TROUBLESHOOTING:

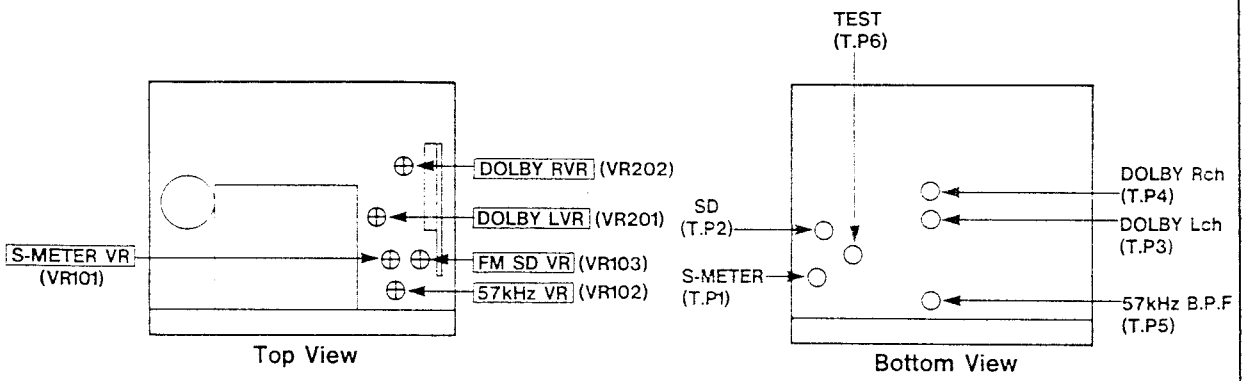
Problem	Cause	Remedy
The power will not come on (no sound produced).	The fuse has blown.	Replace the fuse with a new one which has the same capacity as the old one (in the case of this unit, 10 A).
	The wiring is incomplete.	Read the wire connection instructions again, and correct the wiring.
The sound quality is poor.	The head is dirty.	Clean the head using a cleaning tape.
	The Dolby B NR button has not been pressed.	When using a tape recorded with Dolby noise reduction, press the Dolby B NR button.
When you press a button, it does not have the desired effect, and the appropriate display does not appear.	The microcomputer is malfunctioning due to noise interference or some other cause.	Press the Reset button for about 2 seconds using the tip of a pen or a similar object.

■ **To protect the system, this unit has a self-diagnostic function. If a fault occurs, the unit will inform you by displaying one of a range of error messages. Eliminate the fault by following the "What To Do" instructions.**

Error message	What To Do
HHHH	Playback automatically stops and this message is displayed when the unit is in the CD changer mode and the CD changer's internal temperature rises. →Cool the area around the CD changer and wait a while.
ERROR 1	This error message is displayed when the unit is in the CD changer mode and the built-in battery in the CD changer has run down.
ERROR 2	This error message is displayed when the unit is in the CD changer mode and a fault has occurred in the CD changer mechanism (it cannot carry out a disc change, for example). →The fault is likely to lie in the CD changer mechanism.
ERROR 3	This error message is displayed during playback in the CD changer mode, when the pickup focus is incorrect, due to a scratched disc, for example. →Check the disc in the magazine.
ERROR 6	This error message is displayed when the disc in the magazine has been inserted upside-down. →Check the disc in the magazine.

■ADJUSTMENT:

ADJUSTMENT POINT/TEST POINT



-fig.1-

FM

▼S-METER

1)Connect the digital volt-meter to TP1.
2)Input the 98.1MHz/65dB signal (400Hz/30% MOD).
3)Adjust the level to 2.4±0.1V by VR101.(fig.1)

▼56kHz(B.P.F)

1)Connect the oscilloscope to TP5.
2)Input the 98.1MHz/65dB signal (5.3% SK MOD).
3)Adjust VR102 so that the waveform of TP5 is maximum.(fig.1)

▼FM SD

1)Input the 98.1MHz/28dB signal (400Hz/30% MOD)
2)Connect the power supply voltage(5V) to TP6, and connect the oscilloscope to TP2.
3)Adjust VR103 so that the waveform of TP2 is IF-freq.

CASSETTE TAPE

▼DOLBY NR (CRX97RM Only)

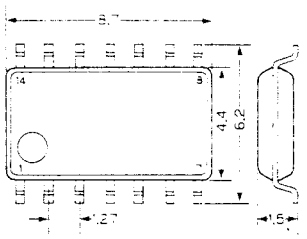
1)Connect the milli volt-meter to TP3(L) and TP4(R).
2)Insert a Dolby level test tape(400Hz-200nWb/m).
3)Adjust VR201(L) and VR202(R) to obtain an outputs of 300mV±1dB.(fig.1)

■EXPLANATION OF IC's:

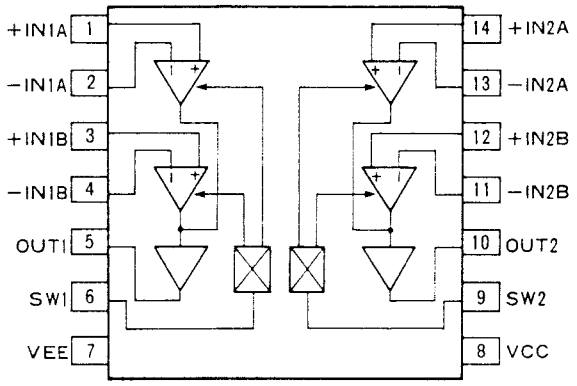
※IC's other than explained below are described in Service Manual 「EXPLANATION OF IC's」 Vol.2～Vol.4.

■BA3129F 051-1811-00 For Audio With SW Dual OP Amp

Outward Form

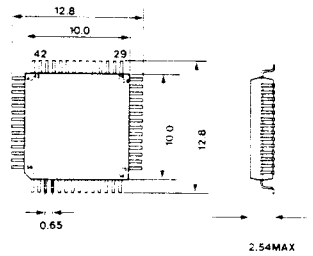


Block Diagram

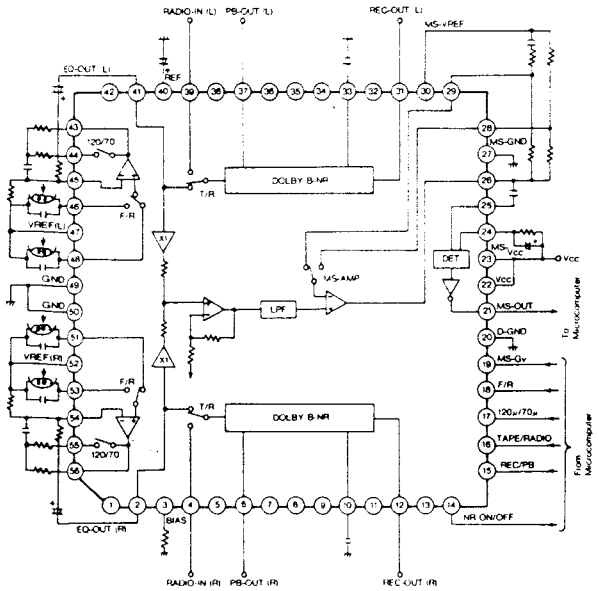


■HA12163 051-1777-00 Dolby B Type NR System

Outward Form



Block Diagram

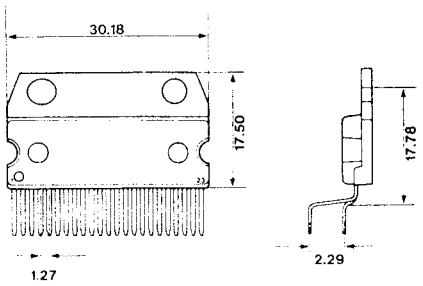


Terminal Description

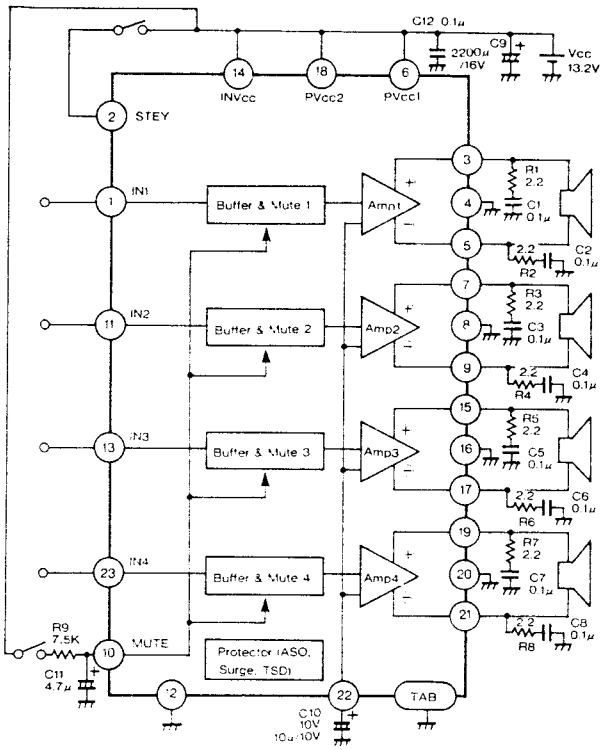
Pin No.	Symbol	Function
1	NC	Not in use.
2	TAI	Tape input.
3	BIAS	Reference current input.
4	RAI	Radio input.
5	NC	Not in use.
6	PB OUT	Playback (Decode) output.
7 ~ 9	NC	Not in use.
10	NR DET	Time constant pin for rectifier.
11	NC	Not in use.
12	REC OUT	Recording (Encode) output.
13	NC	Not in use.
14	ON/OFF	Mode control input.
15	REC/PB	
16	TAPE/RADIO	
17	120μ/70μ	
18	F/R	
19	MS DET	
20	D GND	Digital (Logic) ground.
21	MS OUT	Music sensor output to MPU.
22	Vcc	Power supply.
23	MS Vcc	
24	MS DET	Time constant pin for rectifier.
25	MSI	Music sensor rectifier input.
26	MA DET	Music sensor amp output.
27	MS GND	Music sensor ground.
28	NOI	Negative feedback input for Normal speed.
29	FFI	Negative feedback input for FF or REW.
30	MS VREF	Reference voltage buffer output.
31	REC OUT	Recording (Encode) output.
32 ~ 36	NC	Not in use.
37	PB OUT	Play back (Decode) output.
38	NC	Not in use.
39	RAI	Recode input.
40	RIP	Ripple filter.
41	TAI	Tape input
42	NC	Not in use.
43	EQ OUT	Equalyzer output.
44	EQ OUT-M	Equalyzer output (Metal).
45	NFI	Negative feedback terminal of PB-EQ amp.
46	RIN	PB-EQ input for Reverse.
47	VREF	Reference voltage buffer output.
48	FIN	PB-EQ input for Forward.
49 50	GND	Ground.
51	FIN	PB-EQ input for Forward.
52	VREF	Reference voltage buffer output.
53	RIN	PB-EQ input for Reverce.
54	NFI	Negative feedback terminal of PB-EQ amp.
55	EQ OUT-M	Equalyzer output (Metal).
56	EQ OUT	Equalyzer output.

■HA13150 051-1810-00 19W×4ch BTL Power Amp

Outward Form

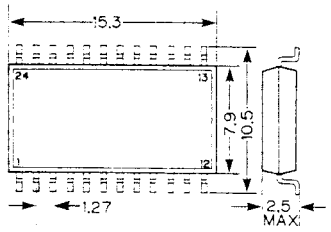


Block Diagram



■LA2232M 051-1937-00 RDS Decoder

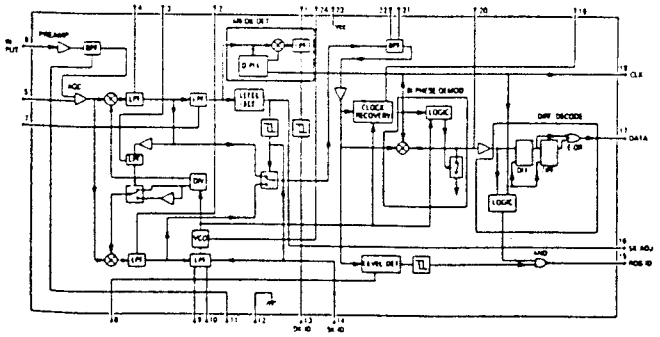
Outward Form



Function

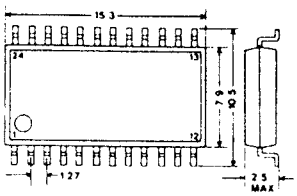
(1) DSB demodulation
(2) Sub-carrier wave regeneration
(3) Bit rate clock regeneration
(4) Data differential decoding
(5) ARI-SK discrimination
(6) ARI-DK discrimination
(7) RDS indicator driving
(8) ARI indicator driving
(9) 57kHz band pass filter

Block Diagram

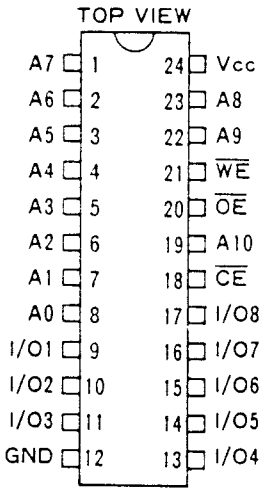


■LC3517BML-12 051-1046-46 2048ward×8bit static RAM

Outward Form

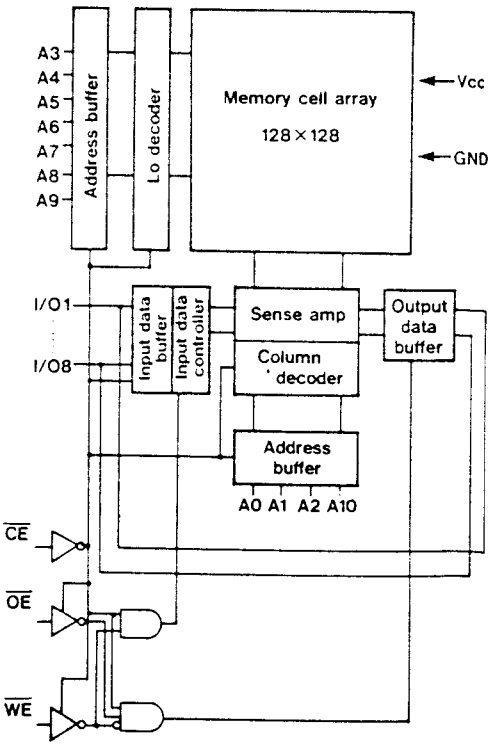


Terminal Connection



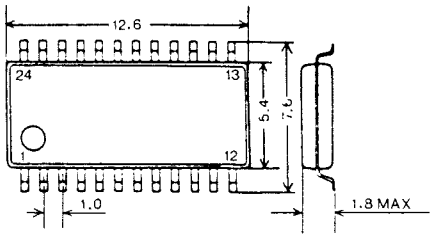
A0~A10	Address input
$\overline{WE}$	Read write control input
$\overline{OE}$	Output enable input
$\overline{CE}$	Chip enable input
I/O1~I/O8	Data I/O
Vcc/GND	Power Supply

Block Diagram

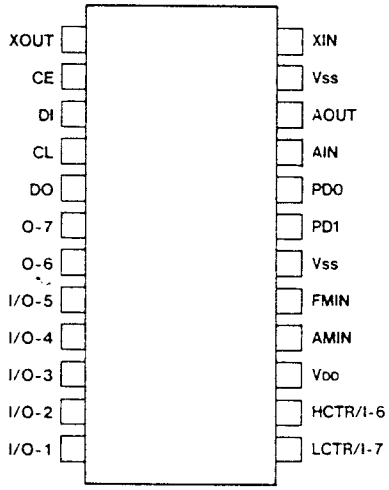


■LC72140M 051-1808-05 PLL FREQUENCY SYNTHESIZER

Outward Form



Terminal Connection

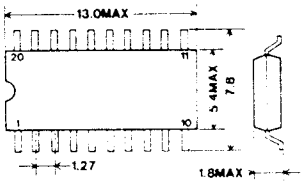


Terminal Description

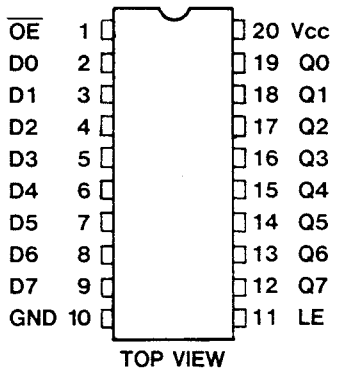
Pin No.	Symbol	I/O	Function
1	X'tal	–	Crystal oscillator connection terminal (7.2MHz).
2	PLL CE	I	PLL IC serial communication chip enable input.
3	PLL DI	I	PLL IC serial communication data input.
4	PLL CL	I	PLL IC serial communication clock input.
5	PLL DO	O	PLL IC serial communication data output.
6	IF MUTE	O	IF mute output. Mute ON at "H".
7	$\overline{\text{IF REQ}}$	O	IF count request output. PLL frequency upon IF count measurement: "L" at divider output, and "H" at measurement completion.
8	LW/$\overline{\text{MW}}$	O	"H" at LW frequency output, "L" at MW & FM frequency output.
9	LO/$\overline{\text{DX}}$	O	Seek sensitivity output. Local("H")/DX("L"). Local seek: "H" for AS first round, "L" for others.
10	$\overline{\text{AM}}$+	O	"L" at MW & LW frequency output, "H" at FM frequency output.
11	$\overline{\text{FM}}$+	O	"L" at FM frequency output, "H" at MW & LW frequency output.
12	RDS LO/$\overline{\text{DX}}$	O	RDS sensitivity and ANT dump control in various seeks of preset call/scan, AS, 01 & 02 follow-up.
13	AM IF	I	AM IF count data input.
14	FM IF	I	FM IF count data input.
15	V_{DD}	–	Supply voltage terminal.
16	AM OSC	I	AM local oscillation signal input.
17	FM OSC	I	FM local oscillation signal input.
18	GND	–	GND terminal.
19 20	PD1 PDO	O	Charge pump output.
21 22	A IN A OUT	I O	Transistor connection terminal for the charge pump or low-pass filter amplifier.
23	GND	–	GND terminal.
24	X'tal	–	Crystal oscillator connection terminal (7.2MHz).

■TC74HC573AF 051-1051-05 Octal D-type Latch With 3-state Output

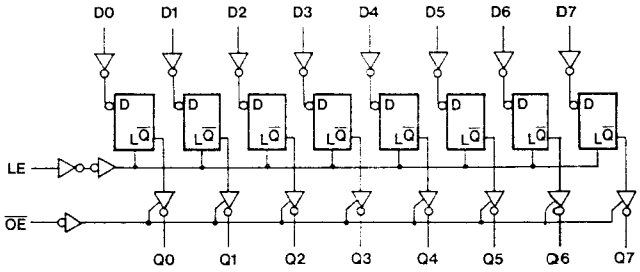
Outward Form



Terminal Connection



System Diagram



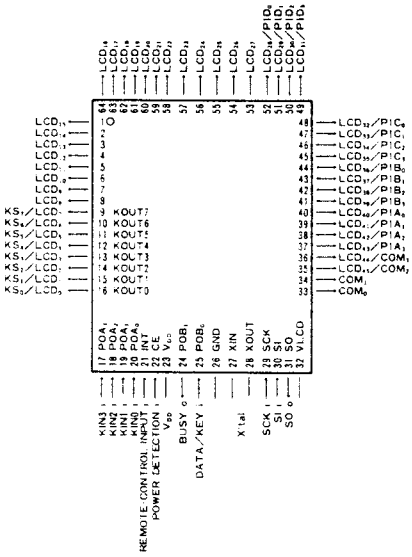
Truth Table

INPUTS			OUTPUTS
$\overline{\text{OE}}$	LE	D	Q(HC573A)
H	X	X	HZ
L	L	X	Qn
L	H	L	L
L	H	H	H

X : Don't Care
Z : High impedance

■μPD17106GC-516-3BE 051-1798-00 Front Panel Controller

Terminal Connection



Terminal Description

Pin No.	Symbol	I/O	Function
1 ⟆ 8	LCD15 ⟆ LCD8	O	LCD controller/driver segment signal output.
9 ⟆ 16	LCD7/KOUT7 ⟆ LCD0/KOUT0	O	Key source signal output for the key matrix commonly used for LCD controller/driver segment signal output.
17 ⟆ 20	KI3 ⟆ KI0	I	Key source signal return input.
21	INT	I	Remote-control input terminal. Normally "H", "L" for data input.
22	CE	I	Power detection input. Power-on at "H", and power-off at "L".
23	V_{DD}	–	Supply voltage terminal.
24	BUSY	O	BUSY output port. H : BUSY, L : READY
25	$\overline{\text{LCD DATA/KEY COMMAND}}$	I	LCD data/key command switching detection input port. When the data is transferred at "H", it is judged to be the key data, remote-control data, command, or PIB input data. When the data is transferred at "L", it is judged to be LCD/DATA.
26	GND	–	Ground terminal.
27 28	X IN X OUT	–	Crystal connection terminal.
29	$\overline{\text{SCK}}$	I	Serial clock input. Serial data transfer clock input from the master microcomputer.
30	SI	I	Serial clock input. Serial data input from the master microcomputer.
31	SO	O	Serial clock output. Serial data output to the master microcomputer.
32	NC	–	Unused.
33 34	COM_0 COM_1	O	LCD COM signal output. { At static, 1/2, 1/3, 1/4 duty / At 1/2, 1/3, 1/4 duty
35 36	LCD_{45}/COM_2 LCD_{44}/COM_3	O	At 1/3, 1/4 duty: LCD COM signal output or LCD controller segment signal. At 1/4 duty: LCD COM signal output or LCD controller segment signal.
37 ⟆ 40	LCD_{43}/PIA_0 ⟆ LCD_{40}/PIA_3	O	LCD controller segment signal output or PIA_0~PIA_3 output ports.
41 ⟆ 44	LCD_{39}/PIB_0 ⟆ LCD_{36}/PIB_3	O	LCD controller segment signal output or PIB_0~PIB_3 output ports or PIB_0~PIB_3 input ports.
45 ⟆ 52	LCD_{35}/PIC_0 ⟆ LCD_{28}/PID_3	O	LCD controller segment signal output or PIC_0~PID_3 output ports.
53 ⟆ 64	LCD_{27} ⟆ LCD_{16}	O	LCD controller/driver segment signal output.

■μPD75517GF-256-3B9 052-3303-01 Master Micro Computer

Outward Form

80 pin prastic QFP

Terminal Description

Pin No.	Pin Name	I/O	Function
1 2	ANO AVref	–	GND pin.
3 4	V_{DD}	–	+5V supply voltage pin.
5	+B-REM	O	+B (AMP) REMOTE signal output port. Active "H"
6	ILL-REM	O	ILL REMOTE signal output port. Active "H"
7	Motor-On	O	At CRX97RM(MECHA), MECHA tape play time: "H". Open at CDC7500R, CRX123RM(GFX): Open.
8	Vol-STB	O	Electronic VR IC STB output port. SANYO LC7537N
9	Vol-Do	O	Electronic VR IC DATA output port. SANYO LC7537N
10	Vol-Clk	O	Electronic VR IC CLK output port. SANYO LC7537N
11	WILL-G	O	W-ILLUMI-Green output port. When green: "H" When amber: "L" Also output at ACC-OFF or power-off. Because an illumination line is provided.
12	WILL-A	O	W-ILLUMI-Amber output port. When green: "L" When amber: "H" Also output at ACC-OFF or power-off. Because an illumination line is provided.
13	DISC-IND	O	CDC7500R only CD-DISC-IN indicator output port. "H" when illuminated CRX123RM, CRX97RM, OPEN
14	KEY/$\overline{\text{Data}}$	O	Serial communication line of the front panel controller (μPD-17106). "H" At key, remote control data, command transmit time. "L" At LCD data transmit time.
15	Lcd-Do	O	Serial communication line data output port of the front panel controller (μPD-17106).
16	Lcd-Sck	O	Serial communication line SCK output port of the front panel controller (μPD-17106).
17	Lcd-Di	I	Serial communication line Din input port of the front panel controller (μPD-17106).
18 19	GND	–	GND pin.
20	PPO	O	Beed sensor tone output port. 4kHz. Open when not used.
21	Lcd-Busy	I	Serial communication line Busy input port of the front panel controller (μPD-17106).
22 ⟆ 24	GND	–	GND pin.
25 ⟆ 28	NC	–	Unused.
29	Jikosin	I	Self diagnostic input port. At power-on, the self diagnostic input mode is effected at "H"
30	$\overline{\text{FWD}}$/REV	I	At CRX97RM(MECHA) FWD/REV detection port. REV: "H" FWD: "L" At CDC7500R, CRX123RM(GFX) GND
31	$\overline{\text{FF/REW}}$	I	At CRX97RM(MECHA) FF/REW detection port. Mute output when FF/REW is "L". "H" at play time GND at CDC7500R, CRX123RM(GFX)
32	$\overline{\text{PACK IN}}$	I	PACK IN detection port at CRX97RM(MECHA). Active "L" With pack at "L". GND at CDC7500R, CRX123RM(GFX)

No.	Pin Name	I/O	Function
33	GND	–	GND pin.
34	DYN-NCB	O	DYNAS-OFF output port at CRX123RM. "L" is output at SEEK, Search, or AS. "H" is output during reception. "L" is always output when DYNAS-OFF is set (double push switch). Open at CRX97RM, CDC7500R.
35	DYN-NC4	O	DYNAS adjustment output port at CRX123RM. "L" is output at DYNAS adjustment (triple push switch). Open at CRX97RM, CDC7500R.
36	NRA DOLBY-ON	O	At CRX123RM, CRX97RM Dolby B, C control port. Dolby B, C ON: "H" Open at CDC7500R
37	NRB DOLBY-$\overline{BC}$	O	At CRX123RM, CRX97RM Dolby B, C control port C: "H", B: "L" Open at CDC7500R.

NRA	NRB	Dolby
L	L	OFF
H	L	DOLBY-B
H	H	DOLBY-C

No.	Pin Name	I/O	Function
38	APC-Out	O	APC control output port at CRX97RM(MECHA). At APC switch ON If a with-music state (Low) is detected once for 60 ms and a High music interval (without music) is detected for 60ms, a plunger is released for 200 ms and "L" is output. Active "L" Open at CDC7500R, CRX123RM(GFX).
39	MTL-OUT	O	METAL switching port at CRX97RM(MECHA). Active "H" METAL ON: "H" METAL OFF: "L" Open at CDC7500R, CRX123RM(GFX).
40	NMI	O	CD mechanical module NMI output port. Switches from the stop mode to the run mode at ACC-ON. High pulses are output for 10μsec or more Normally fixed at "L" Open at CRX123RM, CRX97RM.
41	ACC-CONT	O	ACC control port for slave microcomputer. "H" at ACC-ON. Active "H" "L" at ACC-OFF.
42	Apc-In	I	At CRX97RM(MECHA) Music interval detection input port at APC-ON. Active "H" Music interval (w/o music) at "H" With music at "L" If a with-music state (Low) is detected once for 60 ms and a High music interval (without music) is detected for 60 ms, APC-OUT will be output and halted and the play mode will be effected. GND at CDC7500R, CRX123RM(GFX).
43	TEL-INT	I	TEL-INT input port. "H" during TEL interrupt. Active "H" Mute is applied during interrupt.
44	$\overline{SRQ}$	I	Serial bus run SRQ port. Service request. Communication request signal output from the slave. Normally "H"
45	GND	–	Connect to GND.
46	TIO	–	
47	INT2	–	
48	$\overline{EJECT}$	I	EJECT key detection port at CD(CDC7500R) or TAPE(CRX123RM) (GFX). PLAY/PAUSE/MUTE key detection port at TAPE (CRX97RM) MECHA. "L" at key-on. Active "L" Ejects when pressed for 2 seconds or less at CD (CDC7500R) or TAPE(CRX123RM) (GFX). BACK UP EJECT Ineffective at TAPE(CRX97RM) MECHA.
49	NC	–	Unused.
50	SBI-SI	I	Serial bus line SI port.
51	SBI-SO	O	Serial bus line SO port.
52	SBI-SCK	O	Serial bus line SCK port.

Pin No.	Pin Name	I/O	Function
53	ACC IN	I	ACC power ON/OFF(POWER DCP) detection port. ANDs ACC, POWER, and DCP. This port is turned to "L" when either ACC, POWER, or DCP is turned off. "H" at ACC-ON "L" at ACC-OFF
54	GND	–	GND pin.
55 56	XT1 XT1	–	Subsystem clock pin.
57	GND	–	GND pin.
58 59	X1 X2	–	System clock pin.
60	$\overline{RESET}$	I	Reset input port. Reset at "L"
61	D-OUT	O	Digital control output port. "H" at CD A/C
62	Tun/$\overline{Aux}$	O	Radio/AUX voice switching output port. "H" at Radio "L" at non-Radio
63	$\overline{A\ C}$/Aux	O	Changer/AUX voice switching output port. "L" at Changer "H" at non-Changer
64	$\overline{+5V\text{-}REM}$	O	5V REMOTE signal output port. Active "L" "H" at ACC-OFF "L" at ACC-ON
65	$\overline{System\ MUTE}$	O	System Mute output port. Active "L" Mute On : "L" Mute Off : "H"
66	NRA DOLBY-ON	O	Dolby B, C control port. "H" at Dolby B or C ON.
67	NRB DOLBY-$\overline{BC}$	O	Dolby B, C control port. C : "H", B : "L"
68	NC	–	Unused.
69	SIMU0	I	Initial setting destination 0 At CRX97RM, CRX123RM GFX(CRX123RM) : "H" MECHA(CRX97RM) : "L" Different key arrangement at CDC7500R. CDC7500R : "H" CDC6500R : "L"
70	SIMU1	I	Initial setting destination 1 At CRX97RM(MECHA) With Dolby B: "H" At CRX87RM Without Dolby, APC, MTL: "L"
71	SIMU2	I	Initial setting destination 2 At CRX97RM, CRX123RM With Dolby B/C: "H" CRX123RM Dolby B only: "L" CRX97RM
72	GND	–	GND pin.
73 74 〃 76	GND AN7 〃 AN5	–	Connected to GND.
77	L.R.Z	I	At CDC7500R L.R.Z Mute request signal input. System Mute is output when "H" is input. Reset at "L". GND at CRX123RM, CRX97RM.
78 〃 80	AN3 〃 AN1	–	Connected to GND.

NRA	NRB	Dolby
Low	Low	OFF
Hi	Low	DOLBY-B
Hi	Hi	DOLBY-C

μPD78013GC-567-AB8 052-1301-00 Tuner Controller

Outward Form
64 pin prastic QFP

Terminal Description

Pin No.	Symbol	I/O	Function
1	SD UP	O	Output when measuring a PLL setting IF count.
2	LPF CONT	O	PLL low-pass filter control terminal.
3	RDS MUTE	O	"H" is output for 1 second both at power (POWER & ACC)-on and AM to FM band switching.
4 ~ 7	OUT1 ~ OUT4	O	"H"/"L" is simply output by receiving an arbitrary command from the master.
8	NC	–	Unused.
9	GND	–	GND terminal.
10 ~ 17	SRAM AD0 ~ SRAM AD7	I/O	SRAM control. Address & data line. Port commonly used for the lower 8-bit address and 8-bit data.
18 ~ 20	SRAM A8 ~ SRAM A10	O	SRAM control. Address line. Upper 3-bit address output only port.
21	NC	–	Unused.
22	$\overline{\text{SRAM CE}}$	O	SRAM control chip enable. "L" output at any time while the power (POWER & ACC) is turned on.
23	S CW	I	Initial setting CW detection enable("H")/ disable("L").
24	GND	–	GND terminal.
25	S RDS IC	I	Initial setting RSD-IC selection. PHILIPS("H")/ SANYO("L"). Disabled when RDS ID signal is at "H" and enabled at "L".
26	S SD UP	I	Initial setting SD UP enable("L")/disable("H").
27	DYNAS 2	O	DYNAS-related signal output. "L" output at all timings which turn IF MUTE to "H".
28	DYNAS	O	DYNAS-related signal output.
29	REM	O	Remote signal output. "L" output at any time while the power(POWER & ACC) is turned on.
30	R MUTE	O	RADIO MUTE output. MUTE ON at "L". Turn on when changing the reception frequency.
31	$\overline{\text{SRAM RD}}$	O	SRAM control. Data read signal. "L" output when executing a data read instruction from the SRAM.
32	$\overline{\text{SRAM WR}}$	O	SRAM control. Data write signal. "L" output when executing a data write instruction to the SRAM.
33	AM SD	I	AM band, With-station detection signal input.
34	SRAM ASTB	O	SRAM control timing signal. Always output by effecting the memory expansion mode.
35	RESET	I	Microcomputer reset signal.
36	INITIAL AM SD	I	Initial setting AM band SD detection. Yes("H")/No("L") desigration. "H" : Performs SD detection.
37	ACC CONT	I	ACC signal (Terminal interrupt). "H" at ACC ON, "L" at ACC OFF.
38	RDS IC CLK	I	RDS IC communication, Clock input. (Terminal interrupt)
39	NC	–	No connection.
40	VDD	–	Supply voltage terminal.
41 42	XTAL	I	Main clock oscillator(8.38MHz) connection terminal.
43	GND	–	GND terminal.
44	NC	–	Unused.
45	$\overline{\text{ST ID}}$	I	Stereo signal input. Stereo("L")/monaural("H").
46	A GND	–	A/D converter GND terminal.
47	S Meter	I	Electric field intensity (S meter) input (A/D conversion).
48	CW	I	CW(carrier) signal input(A/D conversion). Only when initial setting CW detection is enabled.
49	SD	I	Station enable detection signal input.
50	$\overline{\text{RDS ID}}$	I	RDS station recognition signal input. RDS station("L").
51	$\overline{\text{SK ID}}$	I	ARI station SK signal input. SK-ON("L").
52	$\overline{\text{DK ID}}$	I	ARI station DK signal input. DK-ON("L").
53	RDS IC DATA	I	RDS IC communication data input. The port is read directly at clock interrupt time.
54	NC	–	No connection. (+5V pullup or GND)
55	A-VDD	–	A/D converter supply power.
56	A VREF	I	A/D converter reference voltage input.
57	PLL DI	I	PLL IC serial communication data input. Takes in the IF count data.
58	PLL DO	O	PLL IC serial communication data output. Sets the frequency divider, general purpose port data, etc.
59	PLL CLK	O	PLL IC serial communication clock output. Clock frequency: 524kHz.
60	PLL CE	O	PLL IC serial communication chip enable output.
61	C-BUS SRQ	O	C-BUS communication SRQ output.
62	C-BUS SBI	I	C-BUS communication data input.
63	C-BUS SBO	O	C-BUS communication data output.
64	C-BUS SCK	I	C-BUS communication clock input. The clock frequency depends on the master microcomputer.

■PARTS LIST:

◎Electrical section

Note) Several different parts listed in the column are alternative parts. One of those parts is used in the set.

SWITCH PWB

1/1

REF NO	PART NO	DESCRIPTION	QTY
D101-104	001-0516-00	Diode MA111	4
D107 108	001-0525-00	Diode IMN10	2
D105 106	001-0644-00	Diode MA113	2
	↓		

↓

REF NO	PART NO	DESCRIPTION	QTY
IC101	051-1798-00	IC μPD17106GC-516 -3BE	1
X101	060-0318-00	Ceramic resonator	1
C101	178-2232-05	Ceramic-C 0.022μF	1

MAIN PWB

[ ]:CRX97RM Only

1/9

[DIODE]

REF NO	PART NO	DESCRIPTION	QTY
D412	001-0188-01	Diode 1S1885A	1
D411 413 414	001-0330-00	Diode 1SS119	3
	001-0352-00	Diode 1SS176	
	001-0352-01	Diode 1SS178	
	001-0638-00	Diode WG713A	
D405	001-0354-00	Diode MA151WK	1
D103[404]	001-0366-00	Diode LTZ-MR15	2
D416	001-0377-33	Diode MA4056H	1
	001-0376-33	Diode MTZ5.6JC	
	001-0400-33	Diode HZS5.6JB3	
D105 406	001-0377-47	Diode MA4091M	2
	001-0376-48	Diode MTZ9.1JC	
	001-0400-47	Diode HZS9.1JB2	
D104	001-0377-48	Diode MA4091H	1
	001-0376-49	Diode MTZ10JA	
	001-0400-48	Diode HZS9.1JB3	
D101 102	001-0378-00	Diode 1SV124	2
D419	001-0423-31	Diode MA4180	1
D410 421	001-0466-00	Diode S5688B	2
D106-108 301 302 402 403 407 408 417 418 420	001-0516-00	Diode MA111	12

2/9

[COIL]

REF NO	PART NO	DESCRIPTION	QTY
L101	010-2003-04	Coil	1
L109	010-2174-20	Coil 47μH	1
L104	010-2174-28	Coil 220μH	1
L401	010-2174-36	Coil 1mH	1
L106 407	010-2199-28	Coil 22μH	2
L108	010-2230-00	Coil 0.015μH	1
L103	010-2330-23	Coil 12μH	1
L102	010-2330-34	Coil 100μH	1
L105	010-2230-38	Coil 220μH	1

3/9

[RESISTOR]

REF NO	PART NO	DESCRIPTION	QTY
VR102 103 [201 202]	012-5123-06	Variable-R 10kΩ	4
VR155	012-5123-15	Variable-R 470kΩ	1
R211	032-0098-03	Chip-R 18kΩ	1
R447	032-0108-00	Flame-P-R 1.8kΩ	1

4/9

[IC]

REF NO	PART NO	DESCRIPTION	QTY
IC404	051-0160-56	IC HD74LS07FBD	1
IC102 301 [303]308 309	051-0350-55	IC NJM4558M	5
IC305 306	051-0556-01	IC NJM2058M	2
IC304	051-0866-16	IC LC7537NE-HT	1
IC403	051-0869-05	IC MB3771	1
IC105	051-1046-46	IC LC35178ML-12	1
IC104	051-1051-05	IC TC74HC573A	1
	051-1051-35	IC MC74HC573AF	
IC405	051-1518-00	IC AN8005M	1
IC201	051-1777-00	IC HA12163	1
IC101	051-1808-05	IC LC7214OM	1
IC307	051-1810-00	IC HA13150	1
IC302	051-1811-00	IC BA3129F	1
IC107	051-1937-00	IC LA2232M	1
IC103	052-1301-00	IC μPD78013GC-567 -3B9	1
IC401	052-3303-01	IC μPD75517GF-256 -3B9	1

5/9

[RESONATOR / CRYSTAL]

REF NO	PART NO	DESCRIPTION	QTY
SUP101	060-0122-10	Surge protector	1
X104	060-0190-02	Ceramic-Resonator	1
X401	060-0266-00	Ceramic-Resonator	1
X101	060-0320-00	Ceramic-Resonator	1
X102	061-1066-00	Crystal	1

6/9

[TRANSISTOR]

REF NO	PART NO	DESCRIPTION	QTY
Q107	100-1162-00	Transistor 2SA1162	1
Q202	100-1297-00	Transistor 2SA1297	1
Q108 413 407	100-1298-00	Transistor 2SA1298	3
Q419	101-1143-00	Transistor 2SB1143	1
Q412	101-1237-00	Transistor 2SB1237	1
Q416	101-1243-00	Transistor 2SB1243	1
	100-1428-00	Transistor 2SA1428	
Q406	102-2458-00	Transistor 2SC2458	1
	102-3330-00	Transistor 2SC3330	
Q414	102-2712-00	Transistor 2SC2712	1
	102-2412-00	Transistor 2SC2412	
Q104 105	102-2712-07	Transistor 2SC2712GR	2
Q[102]	102-3327-00	Transistor 2SC3327	1
	103-1450-00	Transistor 2SD1450	
	103-1504-00	Transistor 2SD1504	
Q103[301] 302-305	103-1306-00	Transistor 2SD1306	6
	102-3326-00	Transistor 2SC3326	
	103-1328-00	Transistor 2SD1328	
Q420	103-1858-00	Transistor 2SD1858	1
Q402 403	103-1996-00	Transistor 2SD1996	2
Q109 409	103-2118-00	Transistor 2SD2118	2
Q106 110	108-0241-50	FET 2SK241	2
Q306 307 405	125-0002-03	Transistor RN2403	3
	125-0001-02	Transistor UN2112	
	125-0014-03	Transistor DTC124EK	
Q111	125-0002-06	Transistor RN2406	1
	125-0014-06	Transistor DTA143ZK	
Q411	125-2003-03	Transistor RN1203	1
	125-2007-02	Transistor DTC124ES	
	125-2011-03	Transistor BA1F4M	
Q408	125-2003-06	Transistor RN1206	1
	125-2007-05	Transistor DTC143ZS	
Q203	125-2004-02	Transistor RN1402	1
	125-2005-01	Transistor UN2211	
	125-2020-02	Transistor DTC114EK	
	125-2031-02	Transistor MUN2211	
Q101 102 112 113 404 417	125-2004-03	Transistor RN1403	6
	125-2005-02	Transistor UN2212	
	125-2020-03	Transistor DTC124EK	
	125-2031-03	Transistor MUN2212	
Q410 415	125-2004-06	Transistor RN1406	2
	125-2020-06	Transistor DTC143ZK	

7/9

[POLYESTOR-CAPACITOR]

REF NO	PART NO	DESCRIPTION	QTY
C220	172-1031-11	Polyes-C 0.01μF	1
C214 215[313] 342 343 345 346 348-351 353 413	172-1041-11	Polyes-C 0.1μF	13
C207 208	172-1231-11	Polyes-C 0.012μF	2
C[314]	172-2231-11	Polyes-C 0.022μF	1
C417	172-4731-11	Polyes-C 0.047μF	1
C115	172-6831-11	Polyes-C 0.068μF	1
C203 204	173-4711-11	Polyes-C 470PF	2

8/9

[CHIP-CAPACITOR]

REF NO	PART NO	DESCRIPTION	QTY
C411	042-0472-00	Tantal-C 10V47μF	1
C109 127 128	043-1600-33	Ceramic 0.033μF	3
C322 323 326 327	043-1600-82	Ceramic 0.082μF	4
C105 191 192	043-1601-10	Ceramic 0.1μF	3
C407	163-1053-60	Alumi 50V1μF	1
C144	163-1063-30	Alumi 16V10μF	1
C117 118 120 121 150 193	176-1011-00	Ceramic 100PF	6
C113	176-1501-00	Ceramic 15PF	1
C114	176-1801-00	Ceramic 18PF	1
C132	176-1811-00	Ceramic 180PF	1
C112 122	176-2201-00	Ceramic 22PF	2
C338 339	176-2701-00	Ceramic 27PF	2
C190	176-8211-00	Ceramic 820PF	1
C406	178-1022-05	Ceramic 1000PF	1
C103 116 129 148 149 152 216	178-1032-05	Ceramic 0.01μF	7
C324 325	178-2222-05	Ceramic 2200PF	2
C102 104 130 141 143 155 401 408	178-2232-05	Ceramic 0.022μF	8
C104 125 126 [315]332	178-3322-05	Ceramic 3300PF	5
C106 217	178-4722-05	Ceramic 4700PF	2
C156 157 304 305	178-5622-05	Ceramic 5600PF	4
C354 355 358 359	178-6812-05	Ceramic 680PF	4
C131	178-6822-05	Ceramic 6800PF	1

9/9

[ELECTROLYTIC-CAPACITOR]

REF NO	PART NO	DESCRIPTION	QTY
C344	042-0465-00	Alumi 16V3300μF	1
C147	042-0505-01	OS-Con 10V22μF	1
C107 211 366-369	183-1053-61	Elect-C 50V1μF	6
C412	183-1053-62	Elect-C 50V1μF	1
C133 138 218 [317 318]320 321 328-331 352 409	183-1063-31	Elect-C 16V10μF	13
C415	183-1063-32	Elect-C 16V10μF	1
C110 111	183-1073-21	Elect-C 10V100μF	2
C209 210	183-2243-61	Elect-C 50V0.22μF	2
C402	183-2263-11	Elect-C 6.3V22μF	1
C123 303 306	183-2263-31	Elect-C 16V22μF	3
C219 334 335	183-3343-61	Elect-C 50V0.33μF	3
C205 206 347 410	183-3363-21	Elect-C 10V33μF	4

↓

REF NO	PART NO	DESCRIPTION	QTY
C108 134 139	183-4753-51	Elect-C 35V4.7μF	26
201 202 212			
213 301 302			
307 308 311			
312[316]319			
336 337 340			
356 357			
360-365			
C119 124	183-4763-11	Elect-C 6.3V47μF	5
135-137			
C414	183-4763-32	Elect-C 16V47μF	1

● How to read resistor

Resistors are deleted from the table of electric components, (except special resistors).
They can be converted to product Nos. as follows.

Film resistor (Carbon film resistor/Metal film resistor)

□□□-□□□□-□□

Classification	Resistance *	Tolerance of the value of resistance		Rated power			Shape	
111 (Carbon film resistor)		0	±2%	0			0	
	Example	1	±5%	1	1/8W	Approx. 3.7mm	1	Horizontal
	33Ω=330	2		2	1/4Ws	Approx. 6.5mm	2	Vertical
	33kΩ=333	3		3			3	
		4		4	1/2W	Approx. 9mm	4	
				7	1/6W	Approx. 3.5mm		
				8	1/2Ws	Approx. 6.6mm		
				9	1/4Wss	Approx. 3.2mm		
114 (Metal film resistor)		0		1	1W	Approx. 9.0mm	0	
		1	±5%	2	2W	Approx. 11.0mm	1	Horizontal
		2		3	3W	Approx. 15.0mm	2	

(Example)

Carbon film resistor | 1kΩ | ±5% | 1/4Wss | Vertical

1 1 1 - 1 0 2 1 - 9 2

Note 1. The first two of three digits representing resistance are effective digits and the last one represents number of "0" following this.
Unit is given in ohm (Ω).

Chip resistor

□□□-□□□□-□ 0

Classification	Resistance *	Tolerance of the value of resistance		Rated power		
116	Example	0	for 0Ω resistor	0	for 0Ω resistor	
	33Ω=330	1	±5%	1	1/8W	1.6mm × 3.2mm
	33kΩ=333	2	±10%	2		
117		0	for 0Ω resistor	0	for 0Ω resistor	
		1	±5%	1	1/6W	1.25mm × 2.0mm
		2	±10%	2		
118		0		0		
		1	±5%	1	1/2W	3.2mm × 4.5mm
		2	±10%	2		
119		0	for 0Ω resistor	0	for 0Ω resistor	
		1	±5%	1	1/16W	0.8mm × 1.6mm
		2	±10%	2		

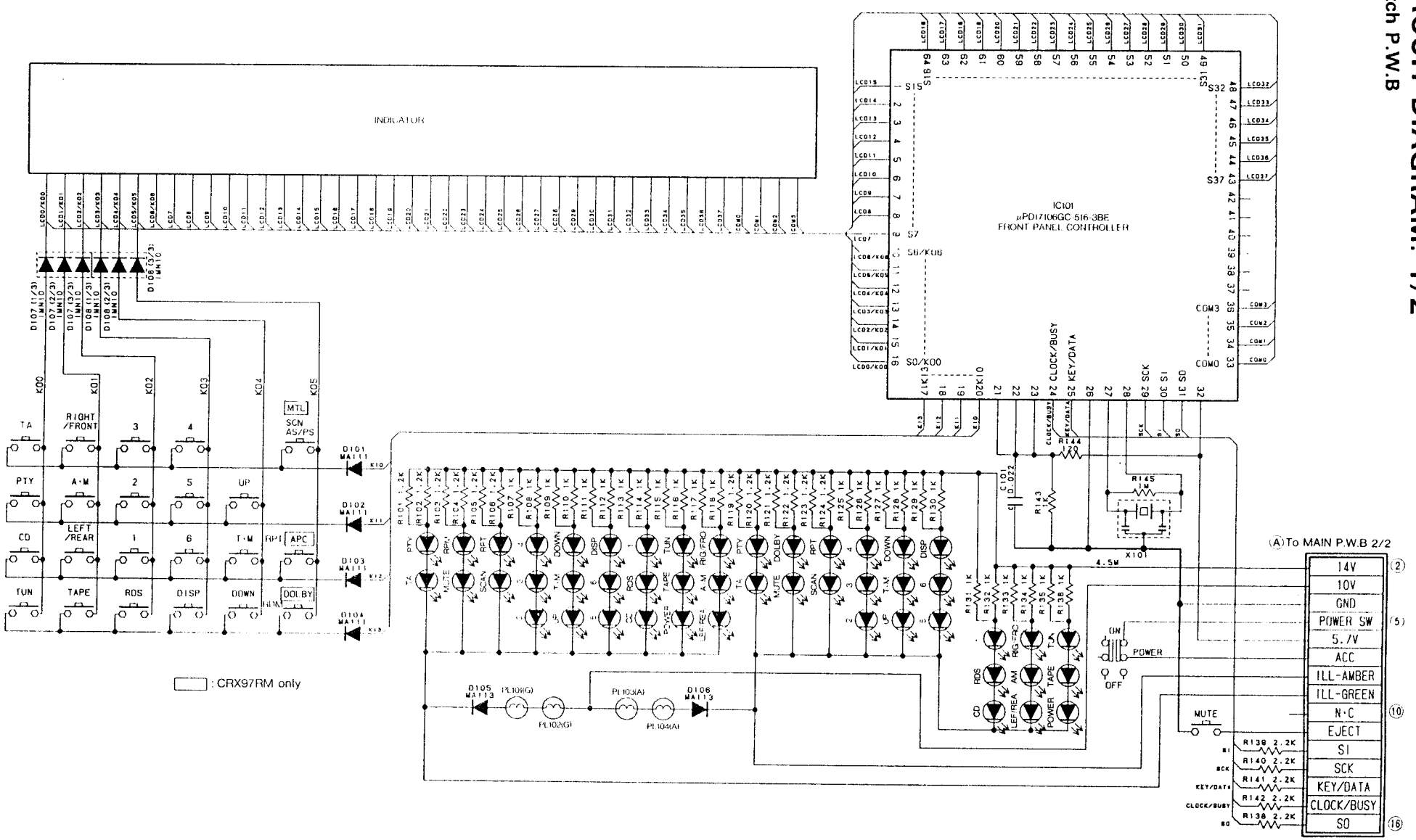
(Example)

Chip resistor (3.2mm × 1.6mm) | 1kΩ | ±5% | 1/8W

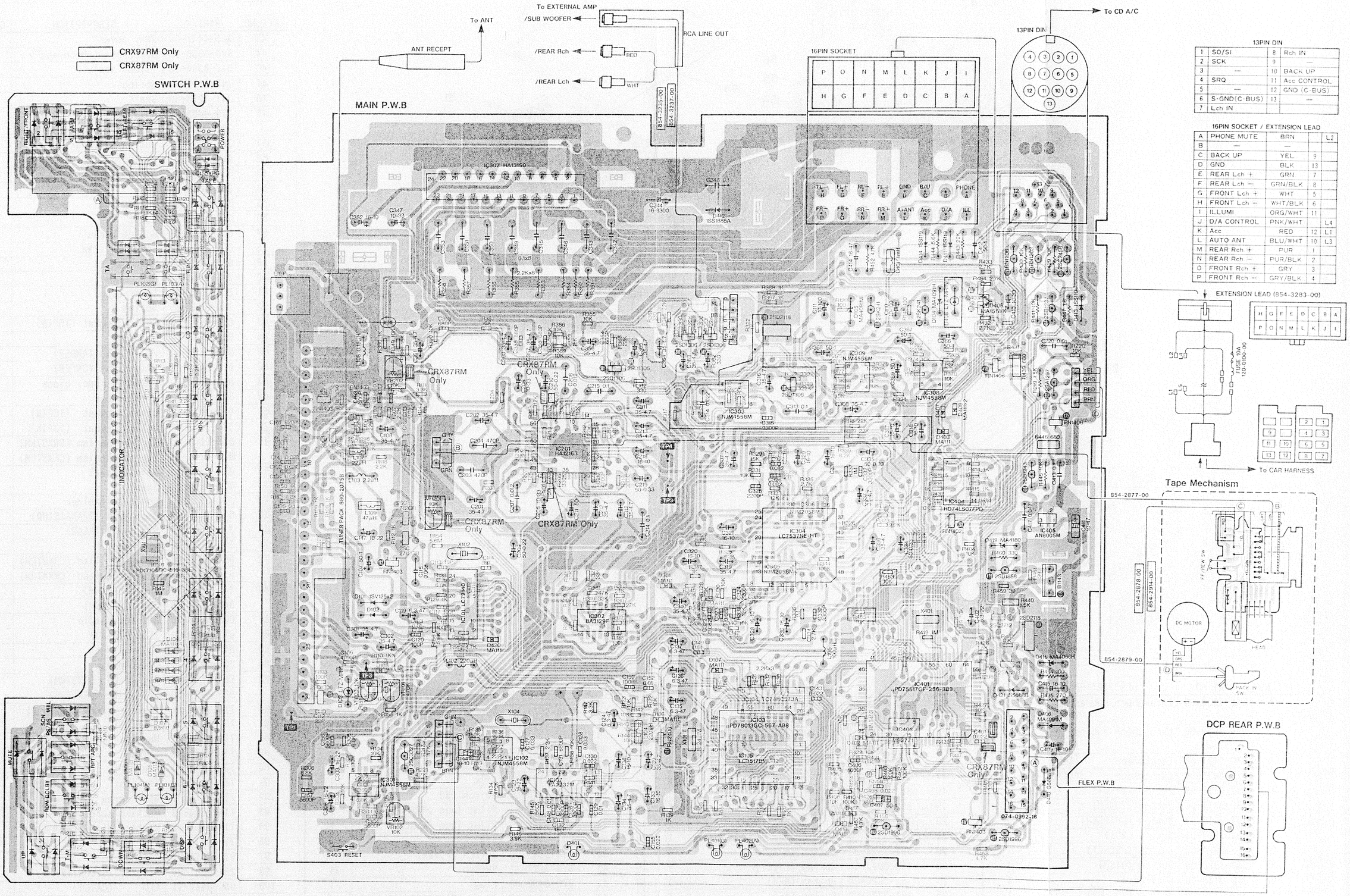
1 1 6 - 1 0 2 1 - 1 0

■CIRCUIT DIAGRAM: 1/2

◎Switch P.W.B

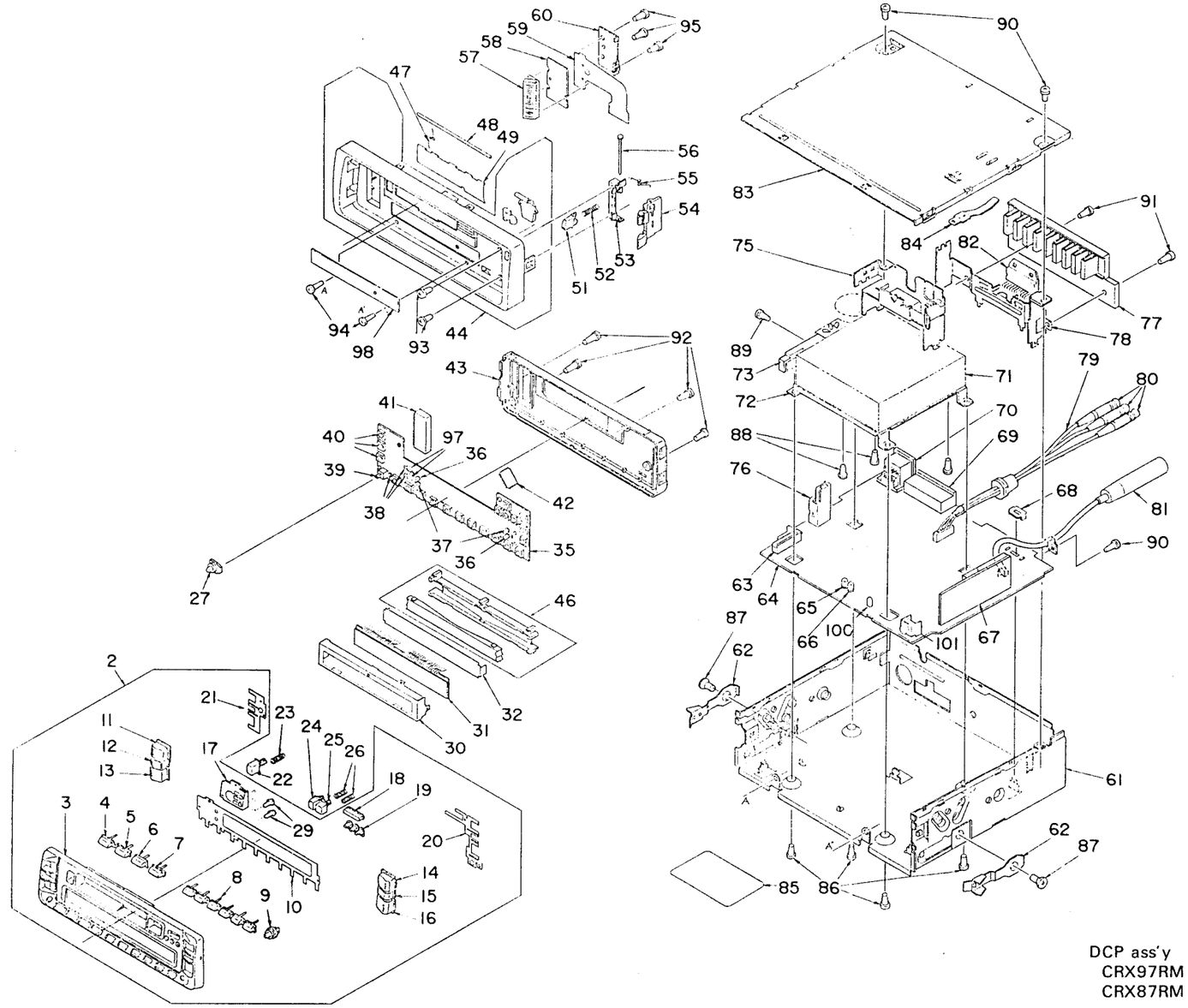


■PRINTED WIRING BOARD:


CRX97RM Only
CRX87RM Only
SWITCH P.W.B
MAIN P.W.B
To EXTERNAL AMP
/SUB WOOFER
/REAR Rch
/REAR Lch
RED
WHT
RCA LINE OUT
To ANT
ANT RECEPT
854-3235-00
854-3237-00
16PIN SOCKET
13PIN DIN
To CD A/C
IC307 HA13160
IC201 HA12163
IC302 BA3129F
IC303 NJM4556M
IC304 LC7537NE-HT
IC305 NJM2068M
IC306 NJM4588M
IC401 μPD75517GF-256-3B9
IC102 NJM4558M
IC103 μPD78013GC-567-AB8
IC104 TC74HC273A
IC105 LC3517BM
IC404 HD74LS07FPD
IC405 AN8005M
CRX87RM Only
CRX87RM Only
CRX87RM Only

■EXPLODED VIEW • PARTS LIST:

◎Main section



DCP ass'y
CRX97RM : DCP-020-200
CRX87RM : DCP-022-200

REF.NO.	PART NO.	DESCRIPTION	Q'TY
2	940-7638-00	Escutcheon sub ass'y (CRX97RM)	1
	940-7639-00	Escutcheon sub ass'y (CRX87RM)	
3	370-5431-06	Escutcheon (CRX97RM)	1
	370-5431-07	Escutcheon (CRX87RM)	
4	382-3316-00	Button (TAPE)	1
5	382-3317-00	Button (TUNER)	1
6	382-3318-00	Button (CHANGER)	1
7	382-3319-01	Button (RDS)	1
8	382-3321-00	Button (PRESET)	1
9	382-3323-00	Button (DISP)	1
10	373-0736-00	Dial cover	1
11	382-3312-00	Button (VOL UP)	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
12	382-3311-00	Button (A·MODE)	1
13	382-3313-00	Button (VOL DOWN)	1
14	382-3314-00	Button (TUN UP)	1
15	382-3310-00	Button (T·MODE)	1
16	382-3315-03	Button (TUN DOWN)	1
17	335-4465-00	Button holder	1
18	382-3329-00	Button (MUTE)	1
19	382-3320-00	Button (PS/AS)	1
20	347-3823-00	Film holder	1
21	347-3822-00	Film holder	1
22	382-3324-00	Button (EJECT)	1
23	750-3074-00	Spring (EJECT)	1
24	382-3326-00	Button (REW)	1
25	382-3325-00	Button (FF)	1

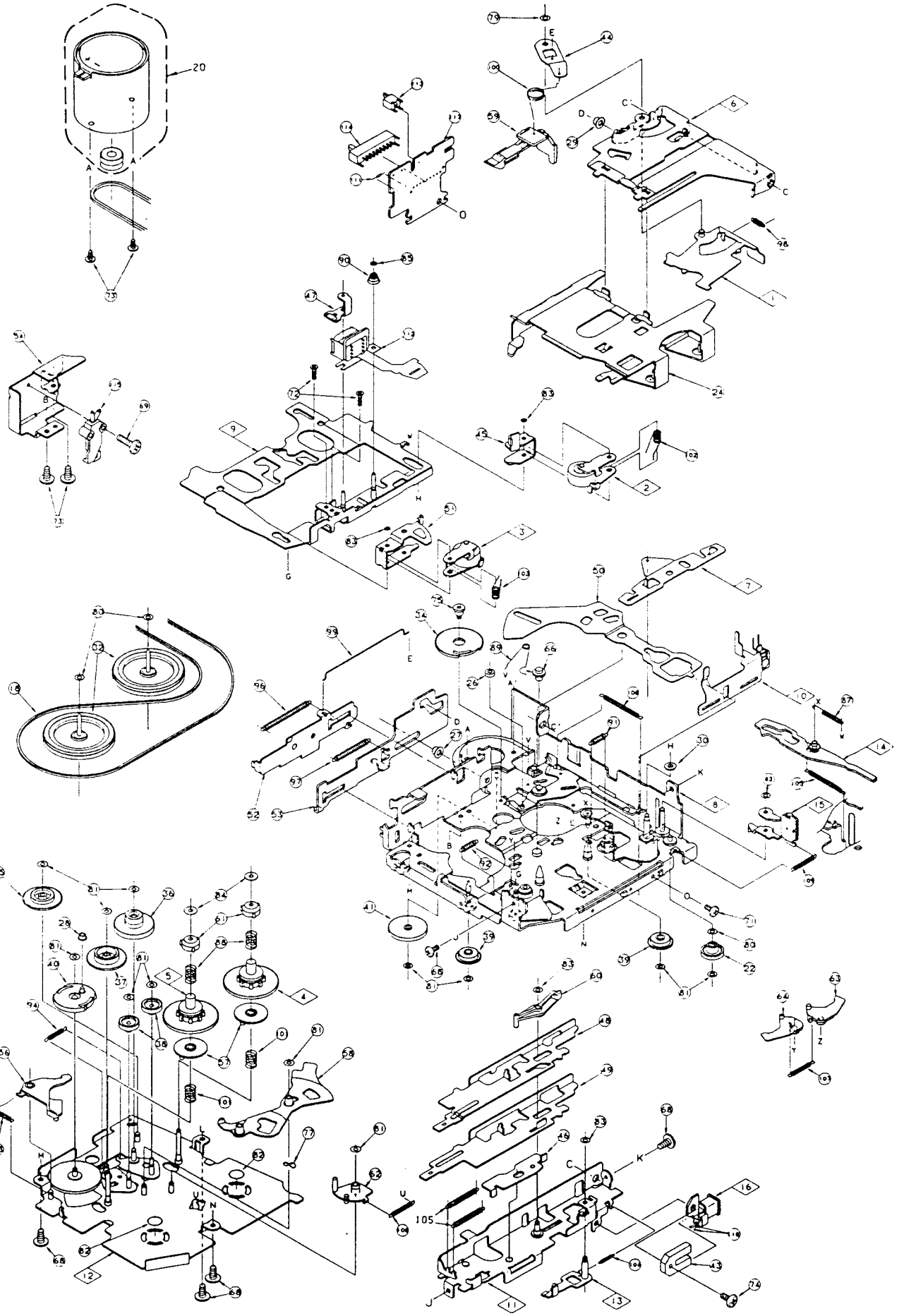
REF.NO.	PART NO.	DESCRIPTION	Q'TY
26	750-3075-00	Spring (FF/REW)	2
27	382-3322-00	Button (POWER)	1
29	382-3341-00	Button (TA/PTY)	2
30	331-0129-00	Shild plate	1
31	379-1001-41	Indicator	1
32	347-3821-01	Film	1
35	039-0170-00	Switch PWB	1
36	017-0426-01	Pilot lamp (GREEN)	2
37	017-0426-00	Pilot lamp (AMBER)	2
38	001-0593-01	LED	3
39	013-3849-00	Switch (POWER)	1
40	013-3977-11	Switch	21
41	076-0456-00	Plug	1
42	051-1798-00	IC (μPD17106GC-516-3BE)	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
43	335-4447-00	Rear cover	1
44	940-3336-00	Outer escutcheon ass'y	1
46	947-0354-00	Illumi ass'y	1
47	750-2530-03	Spring	1
48	341-1278-00	Shaft	1
49	320-0485-53	Dustproof cover (CRX97RM)	1
	320-0485-54	Dustproof cover (CRX87RM)	
51	382-3327-01	Button (RELEASE)	1
52	750-3076-00	Spring	1
53	331-0143-00	Hook holder	1
54	335-4449-00	Hook	1
55	750-3064-00	Spring	1
56	341-1492-00	Shaft	1
57	074-1021-00	Outlet socket	1
58	099-9939-00	Connector PWB	1
59	099-9938-00	Flex PWB	1
60	331-0151-00	DCP Holder	1
61	311-1590-01	Lower case	1
62	750-3060-00	Spring	2
63	074-0992-16	Outlet socket (16PIN)	1
64	074-0169-00	Main PWB	1
65	017-0416-04	Pilot lamp (AMBER)	1
66	017-0416-03	Pilot lamp (GREEN)	1
67	880-2075B	FM/MW/LW Tuner block	1
68	330-9375-00	Earth plate	1
69	074-1023-16	Outlet socket (16PIN)	1
70	074-1022-01	Outlet socket (13PIN)	1
71	930-0703-80	Tape mechanism (CRX97RM)	1
	930-0701-80	Tape mechanism (CRX87RM)	
72	330-9908-00	Mech.bracket	1
73	335-4450-00	Spacer	1
75	331-0135-02	Connector holder	1
76	313-1476-00	Heat sink (TRANSISTOR)	1
77	313-1542-00	Heat sink (REAR)	1
78	331-0134-00	IC Holder	1
79	854-3235-00	Extension lead (CRX97RM)	1
	854-3237-00	Extension lead (CRX87RM)	
80	345-3799-00	Cap (CRX97RM)	3
	345-3799-00	Cap (CRX87RM)	2
81	092-0662-00	ANT Receptacle	1
82	051-1810-00	IC (HA13150)	1
83	303-0429-00	Upper cover	1
84	331-0229-01	Earth plate	1
85	286-8089-00	Set plate (CRX97RM)	1
	286-8081-00	Set plate (CRX87RM)	
86	714-2605-81	Machine screw (M2.6×5)	4
87	731-3006-40	Taptight (M3×6)	2
88	714-3004-80	Machine screw (M3×4)	3
89	716-1619-00	Screw (M2.6×6)	1
90	731-2606-80	Taptight (M2.6×6)	3
91	731-3010-80	Taptight (M3×10)	2
92	716-1555-02	Wave screw (M2×8)	4
93	714-2605-19	Machine screw (M2.6×5)	2
94	714-2004-19	Machine screw (M2×4)	2
95	716-0778-00	Wave screw (M2×6)	3
97	013-3978-01	Switch	2
98	291-0081-00	Sticker (SECURITY)	1
100	001-0412-17	LED (CATS)	1
101	013-3932-00	Switch (RESET)	1

■EXPLODED VIEW • PARTS LIST:

◎Tape mechanism section 930-0703-80 (TOM- I -RM)

⊙CRX97RM



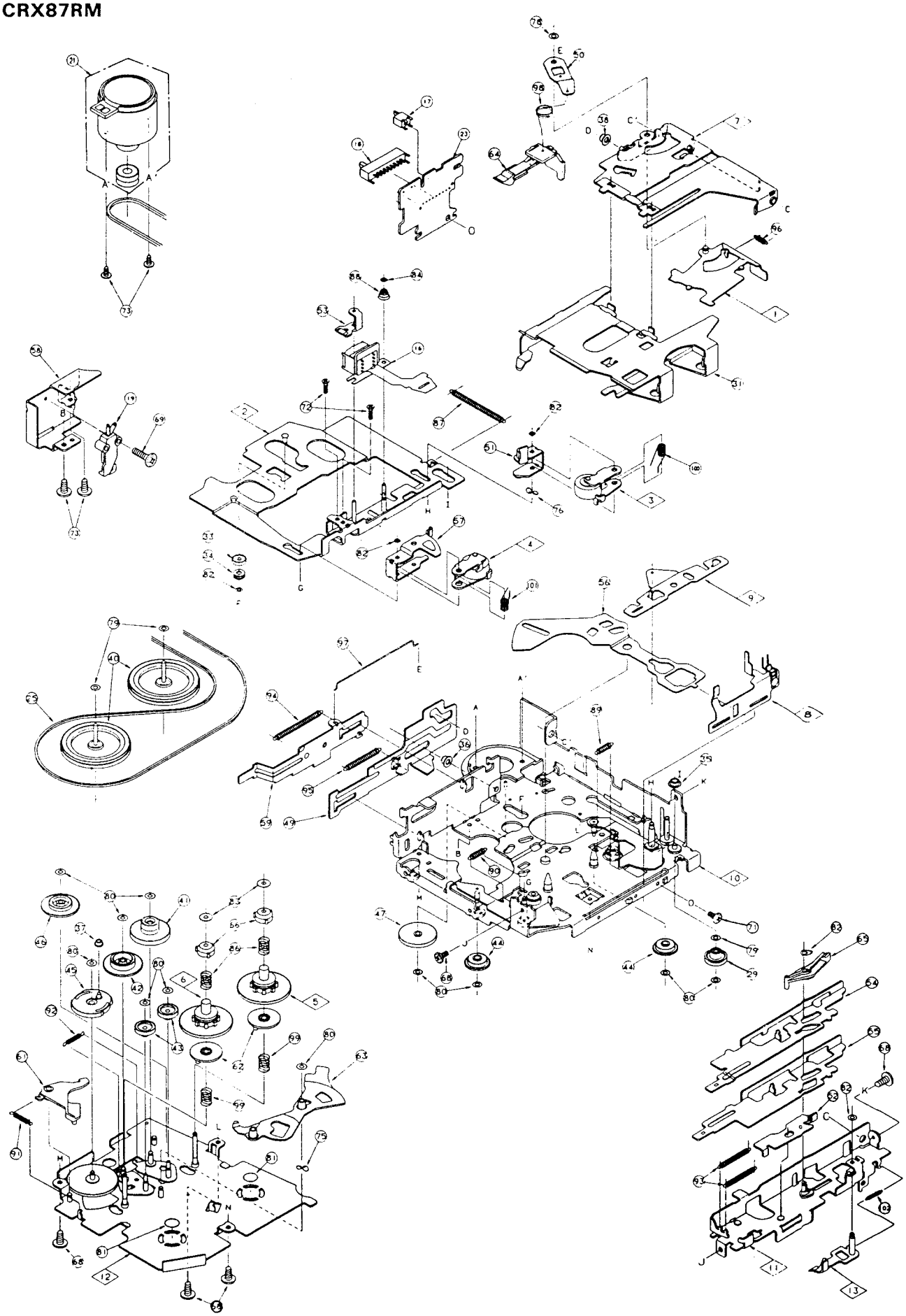
REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4141-03	Off arm ass'y	1
2	960-4146-02	Roller F-ass'y	1
3	960-4147-02	Roller R-ass'y	1
4	960-4154-05	Reel F-ass'y	1
5	960-4155-05	Reel R-ass'y	1
6	960-4194-02	Guide arm ass'y	1
7	960-4203-02	Change-L-ass'y	1
8	960-4309-01	Deck-P-ass'y-RM	1
9	960-4312-02	Head-P-ass'y	1
10	960-4313-03	HD-SW-P-ass'y	1
11	960-4314-02	Frame ass'y	1
12	960-4315-01	Bottom-P-ass'y	1
13	960-4316-02	Lock-A-ass'y	1
14	960-4317-01	Shift-P-ass'y	1
15	960-4318-00	Plunger-L-ass'y	1
16	960-3392-02	Coil ass'y	1
18	602-0113-01	Belt	1
20	SMA-142-100	Motor ass'y	1
22	604-0024-00	Pulley	1
24	606-0092-02	Pack guide	1
26	610-0293-01	Power roller	1
27	610-0326-00	Eject roller	1
28	610-0328-00	CH roller	1
29	610-0337-00	Guide-A-roller	1
30	610-0346-00	Head-G-roller	1
32	611-0087-04	Flywheel	2
34	613-0094-01	Power gear	1
35	613-0258-03	Gear B	1
36	613-0259-02	Gear F	1
37	613-0260-02	Gear R	1
38	613-0261-01	Idler gear	2
39	613-0262-01	FF/REW gear	2
40	613-0264-02	CH gear	1
41	613-0304-10	Gear A	1
43	630-1479-02	Core	1
44	630-2419-02	Swing arm	1
45	630-2422-05	Release link	1
46	630-2424-04	Select link	1
47	630-2427-01	Azimuth link	1
48	630-2678-01	FF lever-DCP	1
49	630-2679-01	REW lever-DCP	1
50	630-2432-02	Change plate	1
51	630-2436-04	REW link	1
52	630-2445-01	Eject lever-CR	1
53	630-2645-00	Eject plate RM	1
54	630-2648-01	Switch base RM	1
56	631-0653-01	Lock link	1
57	631-0656-03	Check plate	2
58	631-0657-02	Check link	1
59	631-0658-01	Pack stopper	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
60	631-0659-03	Mute link	1
61	631-1967-00	Slide bush	2
62	631-2013-01	Cancel link	1
63	631-2014-01	Brake-F	1
64	631-2015-00	Brake-R	1
66	632-1886-02	Lock pin	1
68	714-2003-81	Machine screw (M2x3)	5
69	714-2008-81	Machine screw (M2x8)	1
71	716-0891-01	P.W.B screw	1
72	716-1432-00	Screw (AZIMUTH)	2
73	716-0484-02	Motor screw	4
74	716-1560-00	Plunger screw	1
75	716-1578-00	Screw (POWER GEAR)	1
77	745-0586-03	Spring washer (CHECK LINK)	1
79	746-0622-01	Washer (OFF ARM)	1
80	746-0624-00	Washer (0.25)	3
81	746-0761-00	Washer	12
82	746-0767-00	Washer (FLYWHEEL)	2
83	746-0768-00	Washer (0.5 WARI)	5
84	746-0813-00	Poly-washer (REEL-ASS'Y)	2
85	746-0832-00	Washer (HEAD)	1
87	750-2537-02	Over-P-spring	1
88	750-2564-01	Slide spring	2
89	750-2568-00	Lock spring	1
90	750-2848-00	Azimuth spring	1
91	750-2849-02	FF P-spring	1
92	750-2850-99	REW-P-spring	1
93	750-2852-01	Lock-L-spring	1
94	750-2853-01	Idler-P-spring	1
96	750-2857-02	Eject-L-spring	1
97	750-2858-01	Eject-P-spring	1
98	750-2859-00	Off arm spring	1
99	750-2860-01	Lod spring	1
100	750-2861-01	Slot in spring	1
101	750-2919-02	Check spring-R	2
102	750-2920-01	Pinch spring-F	1
103	750-2921-01	Pinch spring-R	1
104	750-3010-01	Lock-A-spring	1
105	750-3011-00	Shift-P-spring	3
106	750-3012-00	Power-P-spring	1
107	750-3013-00	Brake spring	1
108	750-3014-00	Cancel spring	1
109	750-3015-01	Plunger spring	1
111	001-0330-00	Diode	1
112	011-0307-29	Head	1
113	013-3906-00	Switch (MUTE)	1
114	013-3922-00	Switch (SLIDE)	1
115	013-3924-00	Switch (MAIN)	1
117	099-9573-01	P.W.B	1
118	800-0607-60	Vinyl-coat-wire	2

■EXPLODED VIEW • PARTS LIST:

◎Tape mechanism section 930-0701-80 (TOM- I -C)

⊙CRX87RM



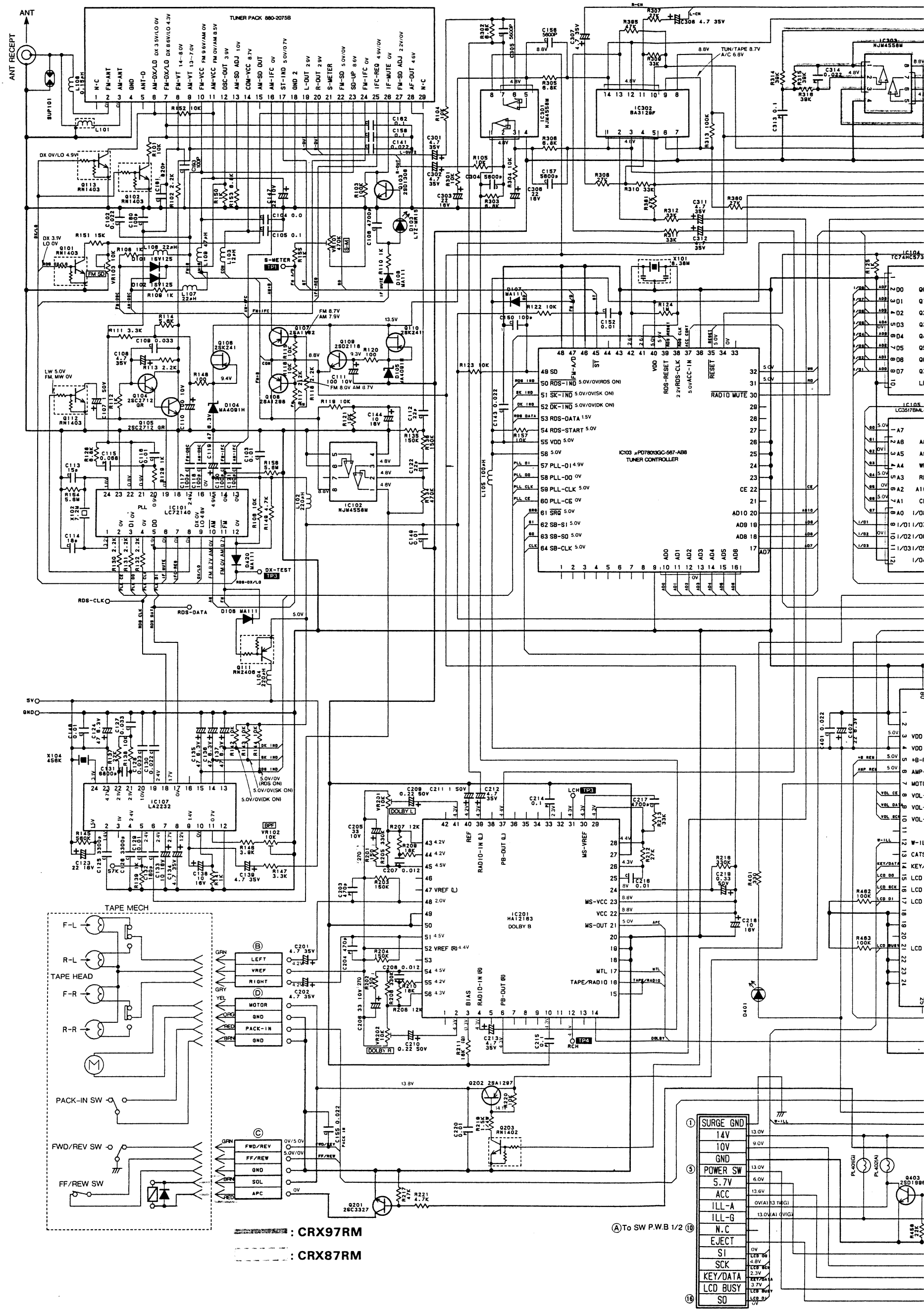
REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4141-03	Off arm ass'y	1
2	960-4143-06	Head-P-ass'y	1
3	960-4146-02	Roller-F-ass'y	1
4	960-4147-02	Roller-R-ass'y	1
5	960-4154-05	Reel-F-ass'y	1
6	960-4155-05	Reel-R-ass'y	1
7	960-4194-02	Guide arm ass'y	1
8	960-4313-03	HD-SW-P-ass'y	1
9	960-4203-02	Change-L-ass'y	1
10	960-4309-12	Deck-P-ass'y-C	1
11	960-4314-02	Frame ass'y	1
12	960-4315-12	Bottom-P-ass'y-C	1
13	960-4316-02	Lock-A-ass'y	1
16	011-0307-29	Head	1
17	013-3906-00	Switch	1
18	013-3922-00	Switch	1
19	013-3924-00	Switch	1
21	SMA-142-100	Motor ass'y	1
23	099-9573-01	P.W.B	1
25	602-0113-01	Belt	1
29	604-0024-00	Pulley	1
31	606-0092-02	Pack guide	1
33	610-0034-00	Head-P-roller	1
34	610-0324-00	Head-G-roller A	1
35	610-0325-00	Head-G-roller B	1
36	610-0326-00	Eject roller	1
37	610-0328-00	CH roller	1
38	610-0337-00	Guide-A-roller	1
40	611-0087-04	Flywheel	2
41	613-0259-02	Gear F	1
42	613-0260-02	Gear R	1
43	613-0261-01	Idler gear	2
44	613-0262-01	FF/REW gear	2
45	613-0264-02	CH gear	1
46	613-0258-03	Gear B	1
47	613-0304-10	Gear A	1
49	630-2417-02	Eject plate	1
50	630-2419-02	Swing arm	1
51	630-2422-05	Release link	1
52	630-2424-04	Select link	1
53	630-2427-01	Azimuth link	1
54	630-2678-01	FF lever-DCP	1

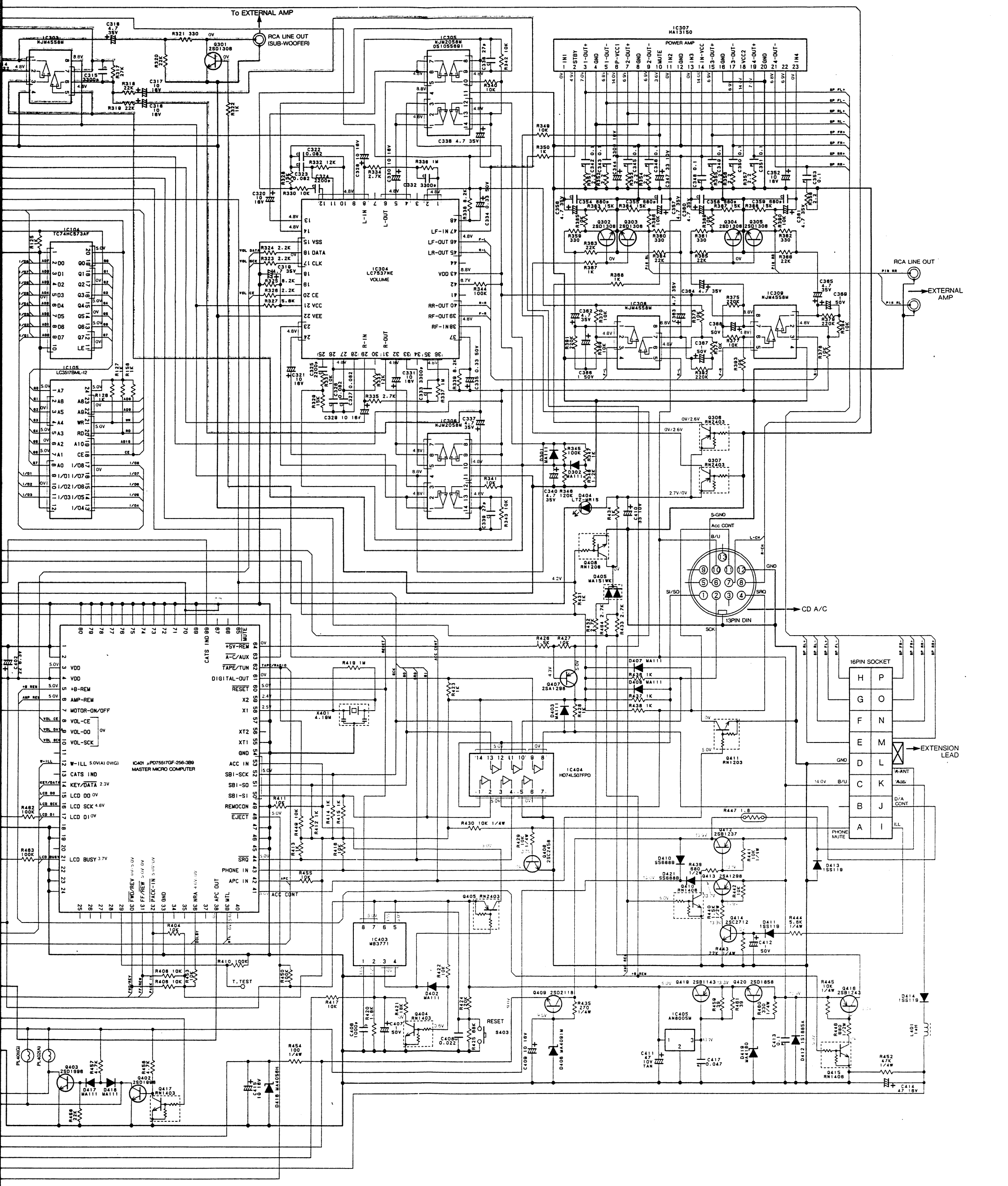
REF.NO.	PART NO.	DESCRIPTION	Q'TY
55	630-2679-01	REW lever-DCP	1
56	630-2432-02	Change plate	1
57	630-2436-04	REW link	1
58	630-2440-01	Switch base	1
59	630-2445-01	Eject lever-CR	1
61	631-0653-01	Lock link	1
62	631-0656-03	Check plate	2
63	631-0657-02	Check link	1
64	631-0658-01	Pack stopper	1
65	631-0659-03	Mute link	1
66	631-1967-00	Slide bush	2
68	714-2003-81	Machine screw (M2x3)	5
69	714-2008-81	Machine screw (M2x8)	1
71	716-0891-01	P.W.B screw	1
72	716-1432-00	Screw (AZIMUTH)	2
73	716-0484-02	Screw	4
75	745-0586-03	Spring washer (CHECK L)	1
76	745-0748-01	Washer (RELEASE L)	1
78	746-0622-01	Washer (OFF ARM)	1
79	746-0624-00	Washer	3
80	746-0761-00	Washer	11
81	746-0767-00	Washer (FLYWHEEL)	2
82	746-0768-00	Washer	5
83	746-0813-00	Poly-washer	2
84	746-0832-00	Washer (AZIMUTH)	1
86	750-2564-01	Slide spring	2
87	750-2847-01	Head P-spring	1
88	750-2848-00	Azimuth spring	1
89	750-2849-02	FF P-spring	1
90	750-2850-02	REW P-spring	1
91	750-2852-01	Lock L-spring	1
92	750-2853-01	Idler P-spring	1
93	750-2854-01	FF/REW spring	2
94	750-2857-02	Eject L-spring	1
95	750-2858-01	Eject P-spring	1
96	750-2859-00	Off arm spring	1
97	750-2860-01	Lod spring	1
98	750-2861-01	Slot in spring	1
99	750-2919-02	Check spring-R	2
100	750-2920-01	Pinch spring-F	1
101	750-2921-01	Pinch spring-R	1
102	750-3010-01	Lock A-spring	1

Printed in Japan 298-5018-00 DEC. 1993 ©

■CIRCUIT DIAGRAM:

◎Main P.W.B




To EXTERNAL AMP
RCA LINE OUT (SUB-WOOFER)
IC307 HAI3150 POWER AMP
IC303 NJM4558M
IC305 NJM2058M
IC306 NJM2058M
IC304 LC7537NE VOLUME
IC104 TC74HC573AF
IC105 LC3517BML-12
IC308 NJM4558M
IC309 NJM4558M
IC401 μPD75517GF-256-3B9 MASTER MICRO COMPUTER
IC403 M83771
IC404 HD74LS07FPD
IC405 AN8005M
Q301 2SD1308
Q302 2SD1308
Q303 2SD1308
Q304 2SD1308
Q305 2SD1308
Q306 RN2403
Q307 RN2403
Q308 RN2403
Q309 RN2403
Q310 RN1408
Q311 RN1203
Q312 2SB1237
Q313 2SA1298
Q314 2SC2712
Q315 RN1408
Q316 2SB1143
Q317 2SD1858
Q318 2SB1243
Q401 2SA1298
Q402 2SD1998
Q403 2SD1998
Q404 RN1403
Q405 RN2403
Q406 2SC2458
Q407 2SA1298
Q408 RN1208
Q409 2SD2118
Q410 RN1408
Q411 RN1203
Q412 2SB1237
Q413 2SA1298
Q414 2SC2712
Q415 RN1408
Q416 2SB1243
Q417 RN1403
D301 MA111
D302 MA111
D401 MA111
D402 MA111
D403 MA111
D404 LTZ-NH15
D405 MA151WK
D406 MA4091M
D407 MA111
D408 MA111
D409 MA4091M
D410 SS6888
D411 1SS119
D412 1S1885A
D413 1SS119
D414 1SS119
D417 MA111
D418 MA111
D418 MA4056H
D421 SS6888
S403 RESET
13PIN DIN
16PIN SOCKET
RCA LINE OUT
EXTERNAL AMP
EXTENSION LEAD
CD A/C
CATS IND
W-ILL 5.0V(A) 0V(G)
KEY/DATA 2.3V
LCD DO 0V
LCD SCK 4.8V
LCD DI 0V
LCD BUSY 3.7V
VOL-CE
VOL-DO
VOL-SCK
+B-REM
AMP-REM
MOTOR-ON/OFF
DIGITAL-OUT
RESET
X1
X2
X401 4.19M
+5V-REM
A-C/AUX
TAPE/TUN
TAPE/RADIO
XT1
XT2
GND
ACC IN
SBI-SCK
SBI-SO
SBI-SI
REMOCON
EJECT
SRQ
PHONE IN
APC IN
ACC CONT
MUTE
T.TEST
PHONE MUTE
S-GND
Acc CONT
B/U
L-CH
R-CH
GND
SI/SO
SRQ
SCK